

April 14, 2025

## Via Electronic Portal

California Air Resources Board Pamela Gupta, Branch Chief, Building Decarbonization Hanjiro Ambrose, Lead Staff, Building Embodied Carbon Policy Email: embodiedcarbon@arb.ca.gov

## RE: Reporting and Baseline Options for Building Embodied Carbon

Dear Ms. Gupta and Dr. Ambrose:

The ROCKWOOL Group (ROCKWOOL) is the world's leading manufacturer of stone wool insulation. We offer a full range of high-performing and sustainable insulation products for the construction industry based on innovative stone wool technology, which help to address many of society's biggest climate change challenges and create new opportunities to enrich modern living by building safer, healthier, and more climate resilient communities. ROCKWOOL appreciates the opportunity to provide feedback to the California Air Resources Board (CARB) on draft concepts for developing baseline greenhouse gas emissions (GHG) and manufacturer reporting requirements to support CARB's development of a framework for measuring and reducing the average carbon intensity of materials used in the construction of new buildings.

## Feedback on the proposed reporting regulation for building material manufacturers.

ROCKWOOL agrees with and incorporates in this letter the comments raised by the North American Insulation Manufacturers Association (NAIMA) in its April 14, 2025 comment letter, which raised areas where the proposed manufacturer reporting regulations can be improved including increasing the primary data and background data requirements to be no older than 5 years instead of 2 years, and reducing the reporting frequency to annual instead of quarterly, among others.

ROCKWOOL additionally has significant concerns and disapproves of CARBs initial thinking for manufacturers to report product quantities and attributional revenue of the products sold into the state. ROCKWOOL, like most manufacturers, does not externally disclose our state-by-state revenue information as it is confidential business information and competitor sensitive data that, if public, could disadvantage a manufacturer competitively. Importantly, the role of insulation and its contribution to building energy efficiency and carbon emissions reduction, as further reviewed in this letter, should not be underscored by its revenue dollars.

ROCKWOOL recommends CARB require manufacturers to submit product-specific environmental product declarations (EPDs). To streamline reporting requirements, it is also recommended that CARB align its approved default emissions factors with background data available in most common life cycle assessment tools, approved data identified in product category rules (PCRs), and environmental product declaration (EPD) requirements in the Buy Clean California Act (BCCA) and California Green Building Code (CALGreen), where applicable.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> See Pub. Contract Code, §§ 3500-3505; Cal. Code Regs, tit. 24, pt. 11, ch. 5; California Department of General Services (DGS), Buy Clean California Act; California Energy Codes and Standards, CALGreen Resources.

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Considering B-stage emissions in the LCA scope for the baseline allows CARB to account for postinstallation GHG emissions from building materials.

ROCKWOOL also agrees with and incorporates NAIMA's comments on the life cycle assessment (LCA) for the baseline, and its recommendation that CARB adopt Alternative 1 (outlined in workshop slide 25) that includes all LCA stages, from A1-C4, where data is available. In addition, ROCKWOOL offers the following comments supporting adoption of proposed Alternative 1.

CARB staff have proposed the use of three alternative life cycle scopes for development of the benchmark. Currently, staff are suggesting a life cycle assessment (LCA) scope that includes manufacturing of building materials, building construction, and useful material lifetime (A1-A5 and B1-B5 life cycle emissions), but excludes operational emissions from energy and water usage (B6/B7 life cycle emissions) and end of life (C1-C4 life cycle emissions). ROCKWOOL fully supports the inclusion of both A-stage and B-stage emissions in the LCA scope, which would allow CARB to account for post-installation GHG emissions, and support future policies to address net GHG emissions across the entire building life cycle.

Inclusion of B-stage emissions in the LCA scope is necessary to account for continuing GHG emissions from building materials after they are installed in a structure. Some building materials may be less energy intensive to produce, and therefore they may generate less A-stage GHG emissions, but they may continue to emit GHGs as the materials degrade over time. For example, recent peer-reviewed publications have documented direct GHG emissions from building materials constructed of plastic under ordinary environmental conditions.<sup>2</sup> An accurate baseline for GHG emissions from building materials materials materials materials materials materials materials from building materials from building materials material

Including B6 stage emissions in the LCA scope encourages the use of efficient building materials that improve energy efficiency and reduce net GHG emissions.

Improving building energy efficiency is essential to achieving California's GHG emission reduction targets, while also supporting state efforts to reduce consumer energy costs.<sup>3</sup> To provide a complete accounting framework and to ensure the Building Embodied Carbon regulations incentivize the use of materials that reduce building GHG emissions over the full building lifecycle, ROCKWOOL strongly recommends that CARB also include B6 stage (operational energy) in the LCA scope.

We recognize and appreciate that including operational emissions is complicated. However, the effect of building materials on overall building energy efficiency is a critical factor in determining whether use of that material helps the state reduce building-related GHGs or further compounds the problem.<sup>4</sup> CARB staff acknowledged during the March 13, 2025 workshop that including operational emissions in the LCA scope better accounts for the interplay between material selection and its impact on operational emissions because some products with higher A-stage embodied carbon yield substantial operational emissions reductions. Staff observed that including operational emissions provides a more holistic framework for evaluating materials, supports other state programs that are focused on

<sup>&</sup>lt;sup>2</sup> See CalTrans, Greenhouse Gas Emissions Arising from Microplastics Pollution (Apr. 26, 2024).

<sup>&</sup>lt;sup>3</sup> SB 48 (Becker, 2023), Building Energy Savings Act, § 1(b), Bill Text - SB-48 Building Energy Savings Act; see also Gov. Exec. Ord. N-5-24 (Oct. 30, 2024) [setting an imperative to mitigate the rising costs of electricity service in California]; California Public Utilities Commission (CPUC), CPUC Response to Executive Order N-5-24 (Feb. 18, 2025), cpuc-response-to-executive-order-n-5-24.pdf.

<sup>&</sup>lt;sup>4</sup> See California Public Utilities Commission (CPUC), Report of Option Dynamics on Grid Benefits of Passive Houses, Phase II (Jan. 15, 2025).



reducing operational emissions, and assists in developing alternative fates for end-of-life materials. Staff also confirmed that it is possible for CARB to incorporate operational emissions into the baseline, noting that doing so will take additional time.<sup>5</sup>

To reach the statutory goal of a 40 percent reduction in GHG emissions from the benchmark by 2035,<sup>6</sup> it is important for CARB's framework to encourage innovation to further improve the energy efficiency of building materials and to incentivize the use of existing efficient building materials that improve energy efficiency and reduce net GHG emissions. For example, all insulation types, including insulation with higher A1-A5 stage GHG emissions, yields significant carbon emissions savings over the lifetime of the building. The aggregate monthly emissions savings resulting from the use of insulation materials quickly exceed the materials' total embodied carbon and, over the projected lifespan of a building, result in significant average emissions savings.<sup>7</sup> As this example shows, CARB cannot design an effective framework to accomplish the statutory GHG reduction goal while also turning a blind eye to the impact of building materials on building energy efficiency.

A baseline developed solely using A1 to B5 stage emissions for the LCA scope cannot accurately represent the contribution of a building material to the building's lifetime GHG emissions. This approach is likely to disincentivize the use of some highly efficient products that would reduce consumer energy use (and associated household cost) and achieve a net reduction in building-related GHG emissions. This result would be contrary to CARB's mandate to reduce building material-related GHG emissions by 40 percent below the baseline by 2035.

Including B- and C-stage emissions for the baseline avoids incentivizing use of materials that contribute to building fuel load in a fire and, when destroyed by fire, release TACs and other pollutants into communities.

Increasing the adoption of home and community-wide hardening measures is a priority for the Administration and a key strategy for improving the survival of homes in wildfires.<sup>8</sup> Wildfires that burn structures and vehicles are known to produce a variety of toxic air contaminants (TACs), such as hydrogen cyanide, polycyclic aromatic hydrocarbons, and dioxins, in addition to particulate matter. Wildfires release greenhouse gases that contribute to climate change, including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).<sup>9</sup> Home hardening measures, including the use of noncombustible building materials, improves the fire safety and resiliency of homes and communities by reducing the likelihood of building ignition;<sup>10</sup> improve the availability and affordability of insurance

 <sup>&</sup>lt;sup>5</sup> CARB, Second Workshop on Building Embodied Carbon – March 13, 2025. Notably, staff also confirmed that it is possible for CARB to incorporate operational emissions into the baseline, although doing so will take additional time.
<sup>6</sup> Health & Saf. Code, §§ 38561.3, 38561.6 (Assembly Bill 2446 (Holden) and Assembly Bill 43 (Holden)).

<sup>&</sup>lt;sup>7</sup> NAIMA, Carbon-Payback-Period-Analysis (Oct. 2024), §§ 4.1, 4.2, 5 ["Over the projected 75-year lifespan of the insulation materials, the average emission savings are conservatively estimated to be 7 to 52 times greater than the embodied carbon for the residential prototypes, but this range can reach up to 127 to 944 times, depending on the climate zone and insulation material used. Similarly for the commercial prototypes, the average emission savings are conservatively estimated to be 29 to 110 times greater than the embodied carbon, reaching up to 526 to 1,996 times, depending on the climate zone and insulation material used."].

<sup>&</sup>lt;sup>8</sup> See, e.g., California Wildfire & Forest Resilience Task Force, About - California Wildfire & Forest Resilience; 2025-Task-Force-Key-Deliverables-.pdf.

<sup>&</sup>lt;sup>9</sup> CARB, Frequently Asked Questions about Wildfire Smoke, Ash & Air Quality | California Air Resources Board; see also CARB, Frequently Asked Questions: Wildfire Emissions; Los Angeles Fire Safe Council, Toxins in the Rubble - Wildfire Los Angeles (Jan. 19, 2025).

<sup>&</sup>lt;sup>10</sup> CalFire, Building in the Wildland | OSFM



through initiatives such as the California Department of Insurance's (CDI) Safer From Wildfires program;<sup>11</sup> and support CARB's work to reduce air quality impacts of wildfires in communities.<sup>12</sup>

To reduce building embodied carbon in a way that supports the state's broader policy goals, CARB will need to also consider the interplay between CARB's Building Embodied Carbon regulations and the state's compelling interest in reducing societal harms caused by wildfires. CARB's framework has the potential to undermine these efforts by incentivizing the use of building materials that, while less energy-intensive to produce, provide less protection against ignition, wildfire spread, and the release of TACs.

CARB can support the state's compelling interest in reducing the societal harms caused by wildfires by including the full cradle-to-grave LCA scope in the baseline modeling. This LCA scope supports the state's broader efforts to improve air quality and expand home and community hardening with noncombustible and fire-resistant building materials that exceed minimum code requirements for fire safety<sup>13</sup> by incentivizing the use of building materials that provide greater protection against building ignition, wildfire spread, and release of TACs.

Thank you for your consideration of our comments.

Sincerely,

MMA

Mark Bromiley, VP Marketing and Business Development ROCKWOOL

<sup>&</sup>lt;sup>11</sup> CDI, Safer from Wildfires.

<sup>&</sup>lt;sup>12</sup> See, e.g., CARB, Air Quality After the LA Fires | California Air Resources Board.

<sup>&</sup>lt;sup>13</sup> See CARB, Building Decarbonization | California Air Resources Board [noting that statewide strategies to reduce GHG emissions from buildings rely on voluntary efforts to go beyond mandatory code requirements].