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**California Air Resources Board**

1001 I Street  
Sacramento, CA 95815

**RE: Potential Amendments to the Cap-and-Trade Regulation**

Dear California Air Resources Board,

Thank you for the opportunity to provide input regarding the California Cap-and-Trade Program and Mandatory GHG Reporting Program. The proposed changes to the Cap-and-Trade program must be carefully considered with proper consultations to ensure the acceleration of industry decarbonization and align with existing legislation like SB596.

RMI is a global non-profit organization that focuses on deep decarbonization of the world's most polluting sectors, leading sustainability programs across four geographies: the U.S., India, China, and the Global South. RMI has a 40-year history of advancing low and zero-carbon transportation solutions and transforming global power systems to support modern, low-carbon economies.

These comments will address the content in the May 31, 2024 Cap and Trade Workshop, focusing specifically on the Cement Sector Allocation and the Renewable Hydrogen MRR Initial Concept. We have attempted to respond to the specific feedback questions in CARB's presentation. Our comments can be summarized in five main points:

- Additional research and consultations are needed to inform key decision points.
- CARB should include alternative binders and SCMs in Cap-and-Trade allocations in order to incentivize developing cement decarbonization routes.
- There must be improved defining, baselining, tracking, and reporting of SCM emissions, preferably on a lifecycle basis, in order to avoid the negation of emissions savings due to supply chain emissions.
- Applicable NAICS codes may need to be expanded to include more general construction material companies due to beneficiating industrial waste streams and quarry activities as SCMs.
- The SCM user, not the SCM producer, should receive allocations for blending SCMs into finished cement product.

- The MRR threshold for hydrogen producers should be lowered in order to encompass smaller hydrogen production facilities.

Please see the entirety of our comments below for a full analysis and sources for these comments. Additionally, we look forward to the opportunity to continue to submit input to the ongoing changes to the California Cap-and-Trade program and are available for any follow-up or questions regarding these comments.

Sincerely,

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## Cement Sector Allocation

**Feedback Requested:** Should alternative clinker and SCMs be eligible for allocation under the cement allocation framework?

- a. How should the definitions of “cement” and “adjusted clinker and mineral additives produced” be modified?
- b. What NAICS codes reflect industrial production of the range of materials that are under consideration?

RMI agrees that the current definition of products for the cement industry excludes multiple materials-based emissions reductions pathways, including the use of alternative lower-carbon cements (produced by innovators/disruptors) which can reduce emissions of cement by up to 100%<sup>1</sup>, and the use of lower-carbon SCMs in cement (produced by SCM producers or cement producers) which under current CalTrans substitution allowances can reduce emissions of cement up to 95%<sup>2</sup>.

RMI agrees with the proposal’s aim to include alternative **binders** and SCMs in Cap-and-Trade allocations to economically incentivize material emissions reductions. We suggest changing the language of the new cement definition to “*limestone-based clinker and low-carbon alternative **binders** that satisfy equivalent performance requirements as limestone-based clinker*”. Clinker refers to a material that has a specific chemical and physical structure which innovators may not meet due to manufacturing process differences while still producing industry-standard binders (ASTM c150 for Brimstone, ASTM c1157 for Sublime, for example). The European Commission, for example, has updated their Free Allocation Regulations to include alternative hydraulic binders for cement clinker<sup>3</sup>.

To ensure tangible emissions benefits while cement performance is maintained, “equivalent performance requirements” must be defined. One such further definition could be “*limestone-based clinker and low carbon alternative binders which produce cement applicable for most if not all common concrete applications, including both structural and nonstructural*”. CalTrans has specifications governing structural and nonstructural (i.e. pavement) applications, grounded in widely accepted ASTM, AASHTO, and ACI standards<sup>4</sup>.

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<sup>1</sup> [Sublime](#) hydraulic binder claims 90% emissions reduction per ton cement with 100% renewable energy; [Brimstone](#) hydraulic binder claims 100% emissions reduction per ton cement with 100% renewable energy

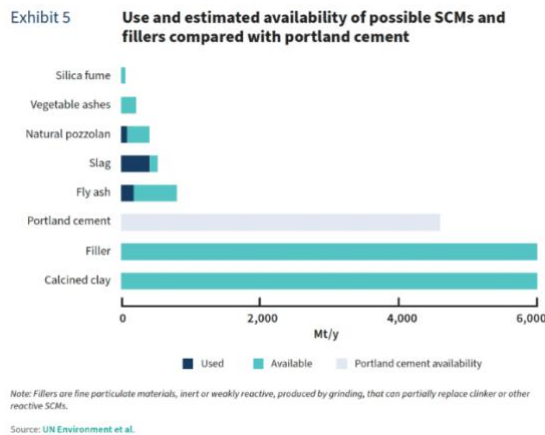
<sup>2</sup> [CalTrans specifications 90-1.02B](#) allow for blended cements with SCM inclusions up to 95% of cement weight (IS – slag), or 70% (IT – blended), based on [AASHTO M240 blended cement definition standards](#) but without the pozzolan limits

<sup>3</sup> <https://www.globalcement.com/news/item/17075-cembureau-raises-concerns-over-far-s-alternative-hydraulic-binder-definition> - RMI believes with the “finished cement” definition, CEMBUREAU’s concerns with pozzolanic materials and a shift to cement as the finished unit are addressed

<sup>4</sup> [CalTrans 2023 specifications](#); [ACI 318](#) also covers reinforced/structural concrete

**If the current proposed definition for “finished cement” becomes the new product basis for cement industrial Cap-and-Trade allocations, RMI foresees that reporting efforts will need to be made on defining, baselining, and tracking SCM-specific emissions, preferably on a lifecycle basis.** This is critical for industrial waste-stream SCMs, such as coal powerplant ash and ground granulated blast furnace slag. One reason for tracking SCM emissions is to fairly account for supply chain emissions. Currently, most SCMs come from outside of California (and outside the US). In fact, of the 46 SCM suppliers listed on CalTrans’s authorized material list for cementitious materials for use in concrete, 57% are from out of state and an additional 30% are from out of the country<sup>5</sup>. Upstream transport emissions could negate blending emissions reductions. Additionally, if industrial emitters like coal energy plants and blast-furnace steel plants receive non-negligible revenue from SCM sales, as is possible due to increasingly limited supplies<sup>6</sup>, SCMs could prolong carbon-intensive production processes. In this case, carbon emissions from the industrial process may need to be assigned to the SCM. A proposal could be to assign emissions on an economic value basis: as the price of the SCMs rises relative to the main industrial product, more of the emissions from the industrial process are assigned to the SCM, reducing emissions benefits. This emissions accounting should be passed along if a third party SCM producer purchases **fresh** coal ash or slag from industrial processes and then beneficiates it (grinds, processes).

Importantly, a certain level of SCM inclusion in “finished cement” already occurs; to ensure additionality, a baseline emissions value for “finished cement” should account for existing SCM inclusion.



*From MPP cement and concrete sector transition strategy. Slag and fly ash supplies have been well-used<sup>6</sup>.*

In the California context, LCAs and potentially EPDs could be used for local production of SCMs, such as mining of natural pozzolans or beneficiation of ponded fly ash.

<sup>5</sup> [CalTrans AML Cementitious Materials for use in Concrete](#)

<sup>6</sup> RMI industry interviews/conference attendance and [MPP cement and concrete sector transition strategy](#)

If SCMs are now to be included in the definition of “finished cement”, **NAICS codes may need to expand to include more general construction material companies, mining, quarrying, and earth manufacturing companies, as well as companies coded as waste treatment and disposal, the last being** due to industrial waste stream beneficiation as SCMs. For example, a large US SCMs producer, Eco Materials Technologies<sup>7</sup>, is coded under 423320 as Brick, Stone, and Related Construction Material Merchant Wholesalers, and 562219 Other Nonhazardous Waste Treatment and Disposal. Additional codes could include companies involved in group 2123 - Nonmetallic Mineral Mining and Quarrying for quarry wastes and other stones with SCM properties, and 327992 - Ground or Treated Mineral and Earth Manufacturing for calcining or further processing SCMs. If we are including upstream industrial companies as valid SCM producers as well, such as coal power plants, we would need to include the NAICS codes for coal power generation, steel manufacturing, and more.

**Feedback Requested:** If SCMs are eligible for allocation, who should receive allocation?

- Should it be SCM producers or cement plants? Why?
- For SCMs, is it feasible for one party to report verifiable information on the amount of SCMs shipped from SCM producers and received by users to make cement? Would multiple parties need to report to ensure accuracy?

RMI acknowledges the importance and nuance of this framework, and thus recommends additional research and consultation with appropriate stakeholders. It is RMI’s initial perspective that **the SCM USER, not the SCM producer, should receive allocations for blending SCMs into finished cement product** (the user could be a cement plant or concrete plant). Providing allocations to the user guarantees that SCMs are physically blended into final cement products to be incorporated at active construction sites. The user should be physically incorporating SCMs into blends and selling the blends either as cement or concrete. Writing the guidance in this way also removes the need to delve into specific types of SCM producers, cement plants versus concrete plants, and materials tracking responsibilities as the SCM makes its way into final cement blends.

We remain agnostic on whether the SCM user is a cement plant that begins producing blended cements (such as IT cements which allow for SCMs like bottom ashes, fly ash, slag, pozzolans and calcined pozzolans, and calcined clay, in addition to limestone filler), or a concrete mixing plant (ready mix or precast) that incorporates or further incorporates SCMs into the final cement product. Under the definitions CARB is proposing, this would look like cement plants producing “finished cement” with “yearly finished cement production” defining their allocation quantities which includes receiving additional SCM allocations based on how much SCM they use onsite during the production of “finished

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<sup>7</sup> [Eco Materials Technologies NAICS codes](#)

cement”. Concrete mixing plants producing “finished cement” could potentially opt-in to the cap-and-trade system to sell allocations based on how much SCM they use onsite at the plant to produce their “finished cement” products.

Our proposal that SCM *users* receive allocations renders the second question moot, as the user would be the sole and final guarantor of how much SCM they used in producing their cement. SCM users that are cement plants are already required to test and report mix content for quality checks and industry standard tests (ASTM). SCM users that are concrete mixing plants are also required to test and report mix content for quality checks, industry standard tests (ACI), and to guarantee mix production for downstream customer use (such as contractors, structural engineers, and architects). **Both users would track how much SCM they use onsite, preventing double-counting of SCMs at the concrete level if already mixed in at the cement plant.**

A question might be raised on how SCM producers would benefit (if at all) from the chosen allocation method. We believe that assigning allocations to SCM *users* would create an upstream demand signal to SCM producers as allocations carry economic benefit and users would be incentivized to continue or increase use (as much as the market and standards are willing to accept blended cements). Our proposal also aligns with the goals of SB 596 to have cement **used in CA** be net zero by 2045; having the SCM *user* receive allocations implies they are a California entity, and thus the cement will likely be used in California construction given the locality of cement and concrete markets.

RMI recognizes that the market is still the final determinant of what types of cement are used in what quantities. Some structural concrete elements require cements with high strength; pavements may require cements with fast setting times. The carbon content of cement is only one of many metrics by which final cements are evaluated and selected on projects. We believe that the market will continue to be able to balance the types of cement selected even with the allocation system; admixtures may adjust blended cements to required performance, and OPC versus blended cement demand may balance out over annual production. A concern that must be addressed in the future is if certain cement producers are disadvantaged due to more conservative local code requirements (city, county, multi-building owners like community colleges) excluding blended cements.

**Feedback Requested:** Who should be required to report imported cement data to MRR?

- Which products or materials should be reported? Could imported cement reporting be disaggregated by component materials?

RMI believes emissions reporting of cement imports is critical to prevent carbon leakage of finished cement and SCM supplies. Both “finished cements” and SCMs are being imported to CA and should be reported under emissions reporting schemes (in line with our earlier proposal that SCMs require a robust emissions accounting scheme). Currently, Type IL blended cement, fly ash, and slag are being imported, but future scenarios could occur in

which other blended cements (IS, IP, IT) or new SCM types (calcined clay, bottom ash, pozzolans) come as imports, so the range of finished cements and SCMs covered under emissions reporting should be kept flexible and/or broad.

### **Renewable Hydrogen: MRR Initial Concept**

RMI agrees with CARB that the MRR threshold for hydrogen producers should be lowered to encompass smaller hydrogen production facilities. While we are not prepared to recommend a specific threshold for being subject to the Cap-and-Trade, we believe there are important benefits to lowering the threshold to include more facilities.

First, producing hydrogen through electrolysis allows for more distributed, small-scale production facilities, and lowering the threshold would better accommodate this wider range of facility sizes. Given the potential for electrolytic hydrogen production to be truly zero emission; requiring these facilities to participate in the Cap-and-Trade will incentivize more investment in the cleanest hydrogen production method.

Second, lowering the threshold could also lead to greater decarbonization of the industry through the inclusion of more zero or low emission hydrogen production data, which would lower the emission benchmark during future revisions. This is in accordance with Cap-and-Trade's "one product, one benchmark" principal for industrial allocation.