

# Coalition for Sustainable Cement Manufacturing & Environment

1107 9th Street, Suite 930 | Sacramento, CA 95814 | (916) 447-9884

May 14, 2020

Ms. Mary Nichols  
Chairman  
California Air Resources Board  
1001 "I" Street  
Post Office Box 2815  
Sacramento, California 95812

Subject: **CSCME's Response to Questions for Stakeholders on Meeting California's Carbon Neutrality Goals: Approaches for the Industrial Sector**

Dear Ms. Nichols:

The Coalition for Sustainable Cement Manufacturing and Environment ("CSCME"), a coalition of all five cement manufacturers in California,<sup>1</sup> provides these comments in response to the California Air Resources Board's ("CARB's") February 20, 2020 presentation on "Meeting California's Carbon Neutrality Goals: Approaches for the Industrial Sector" and otherwise for CARB's consideration as part of its ongoing evaluation of optimal approaches to carbon neutrality in the industrial sector.

## **CSCME supports CARB's process for supporting the state's ambitious carbon neutrality goals.**

CSCME supports CARB's process-oriented approach to supporting the state's long-term carbon neutrality goals. CSCME particularly applauds CARB's emphasis on learning, dialogue, and fact-finding, including holding a series of meetings and workshops to discuss the role of the industrial sector and carbon capture, sequestration, and options for utilization.<sup>2</sup>

More broadly, CSCME supports coordinated efforts toward reaching net neutrality. In particular, CSCME emphasizes the need for a multi-stakeholder effort to remove barriers to incremental emissions reductions in the near-term while accelerating the development and deployment of technologies that dramatically reduce emissions in the long-term. CSCME is committed to building on past engagement with CARB to work together on the coordinated measures that will be critical to meeting California's ambitious emissions reduction goals.

CSCME believes that any discussion about achieving carbon neutrality in the cement industry must start with a firm understanding that the cement-concrete supply chain is both a source of and a sink for GHG emissions. On the one hand, the production of cement entails significant "process emissions" in which CO<sub>2</sub> is effectively driven out of limestone, which is the principal raw material. On the other hand, a substantial portion of those emissions are effectively "reabsorbed" (i.e., sequestered) by the cement in

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<sup>1</sup> The Coalition includes CalPortland Company, Cemex, Inc., Lehigh Southwest Cement Company, Mitsubishi Cement Corporation, and National Cement Company of California Inc. There are ten cement plants located in California, eight of which are currently operating.

<sup>2</sup> Governor Edmund G. Brown signed Executive Order B-55-18 To Achieve Carbon Neutrality in September 2018. The order sets a goal of achieving economy-wide carbon neutrality in California by 2045.

concrete over time. For instance, a 2016 peer-reviewed study published in the journal *Nature* estimated that 43% of process-related emissions are ultimately absorbed into concrete through this re-carbonation process.<sup>3</sup> In short, achieving carbon neutrality in the cement industry is not synonymous with eliminating all GHG emissions associated with production.

The California cement industry has already taken early actions that have significantly reduced its carbon footprint and is actively evaluating options for achieving additional reductions. These early actions include meaningful capital investments in plant performance and production efficiency. As a result, the vast majority of California cement plants already utilize the most energy efficient technologies (including preheater/precalciner kilns). Further industry-wide reductions will require significant research, testing, regulatory coordination, and, in some cases, funding to expand the envelope of feasible approaches. There is more work to do, and the California cement industry is committed to collaborating with policymakers to unlock near- and longer-term emissions reduction opportunities while meeting California's needs for durable and resilient infrastructure.

CSCME sees several near-term opportunities for emissions reductions that, if unlocked, could begin contributing to a state-wide pathway towards carbon neutrality. These include measures that are currently technically feasible and commercially viable but face one or several barriers to wide-scale deployment (e.g., regulatory barriers, public acceptance, R&D needs). CSCME supports efforts toward long-term emissions reduction goals—including and especially when it comes to investments in demonstration-stage technologies such as carbon capture, storage, and utilization ("CCUS") technologies—while also recognizing that more immediate actions can and should be taken in parallel to these longer-term investments.

**Public sector support for and investment in industrial sector carbon capture, utilization, and storage technologies is critical for deep decarbonization.**

When it comes to a long-term plan for dramatically reducing the California cement industry's emissions footprint, technologies such as CCUS will play a pivotal role. The irreducible and unalterable nature of process emissions—which account for more than half of the industry's GHG footprint—means that the cement industry's envelope of technically feasible opportunities is limited absent the successful and cost-effective deployment of CCUS.

Currently, CCUS is an important area for exploration and innovation, but its technical maturity and commercial viability for application in the cement industry remains limited. Deployment forecasts are characterized by long time horizons and significant uncertainty, and very few projects have surpassed the demonstration phase.<sup>4,5</sup> Public support to accelerate the deployment of pilot projects will be critical to achieving decarbonization on the level of magnitude laid out in the state's carbon neutrality goals. To this

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<sup>3</sup> Xi, F., Davis, S. J., Ciais, P., Crawford-Brown, D., Guan, D., Pade, C., ... & Bing, L. (2016). Substantial global carbon uptake by cement carbonation. *Nature Geoscience*, 9(12), 880-883.

<sup>4</sup> Chatham House (2017). *Making Concrete Change: Innovation in Low-carbon Cement and Concrete* (p. 10).

<sup>5</sup> Environmental Science and Technology (2016). *Carbon Capture in the Cement Industry: Technologies, Progress, and Retrofitting*.

end, CSCME recognizes the importance of public support and funding for research, demonstration, and development (“RD&D”) for CCUS applications in the industrial sector and at cement plants specifically.

Notably, CARB staff’s February 20 presentation highlighted the European Union’s “Horizon 2020” program, which provides funding for research and innovation, including partial funding for a pilot cement plant equipped with an oxyfueled kiln with flue gas recirculation that enables efficient capture of process-related CO<sub>2</sub> emissions.<sup>6</sup> As CARB staff noted, the project has helped create a public/private working group for low carbon cement initiatives that provides valuable opportunities for collaboration. Despite the European Union’s advancements, California should take the lead by investing now in the innovation and RD&D necessary to become the global leader in the deployment of decarbonization technologies that will enable the cement industry to contribute to long-term emissions reduction goals.

**Short- and medium-term paths toward emissions reduction can be unlocked by eliminating regulatory and other hurdles.**

The California cement industry has made significant progress to date in reducing its carbon footprint. As noted above, this progress is the result of consistent investments in energy efficiency improvements and expanded use of lower-carbon fuels.

Looking forward to the next set of short- and medium-term opportunities for reducing the industry’s emissions, CSCME has identified a suite of feasible and effective solutions, including increasing use of engineered municipal solid waste (“EMSW”), waste heat recovery technologies, use of alternative raw materials, and more. Unlocking these opportunities will require taking steps to address market, technical, and regulatory barriers, including actions that are incremental, at times highly local, and often quite technical. For example, these could include measures that would enable greater use of lower carbon fuels as primary energy sources and market adoption of Portland-Limestone Cement (“PLC”).

In particular, removing barriers to greater use of PLC would have a rapid and material impact on the industry’s emissions profile. It could significantly reduce GHG emissions if the state adopts standards that permit the use of PLC, which allow an additional 10% of limestone to be added to the final product. In the United States, 32 states permit the use of PLC. In Europe, the cement industry has used PLC for more than 40 years, and in Canada, the industry has used PLC for more than a decade. PLC provides the quickest and most cost-effective path to significantly reducing GHG emissions in the California cement industry.<sup>7</sup>

**A border carbon adjustment or similar mechanism is critical to minimizing leakage risk in the context of moves toward deep decarbonization.**

Finally, effectively minimizing the cement industry’s leakage risk will be even more critical in the context of the deep decarbonization required to meet California’s ambitious net zero goals. As CSCME has extensively documented in prior comment letters, the California cement industry has an exceptionally high risk of leakage due to a unique combination of factors, including extraordinarily high compliance costs (due to much higher emissions intensity compared to other industries), limited direct abatement

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<sup>6</sup> World Cement (2016) Tackling the Climate Challenge – Part Two.

<sup>7</sup> California-Nevada Cement Association (2017). Bringing a Lower Carbon Cement to California: Portland-Limestone Cement.

opportunities (due to the high proportion of process emissions), significant exposure to high import competition (due to cement being a fungible commodity), and substantially lower GHG footprint compared to imported cement (due to California's use of highly energy efficient technology and the substantial GHG emissions associated with transporting imported cement). This leakage risk will persist in the absence of a mechanism (e.g., an incremental border carbon adjustment) that treats domestically-produced cement and imported cement similarly with respect to carbon compliance obligations and costs. This risk of leakage and its detrimental impact on climate change objectives will likely increase as the domestic industry moves to invest in further emissions reduction.

In the context of carbon neutrality for California, the consideration of leakage risk is integral to designing an effective decarbonization roadmap. Leakage risk imperils the integrity of the state's environmental goals by increasing the likelihood that emissions shift elsewhere. In blunt terms, the goal is to decarbonize industry, not displace it (and, by extension, its emissions). In order to achieve carbon neutrality goals, minimizing leakage is imperative. Absent a mechanism for minimizing leakage risk, the state risks a policy failure by simply shifting emissions from California to other jurisdictions.

Accordingly, CSCME continues to urge CARB to adopt measures that complement the allowance allocation framework under the cap-and-trade program to minimize the growing risk of leakage over time. Such measures could include leveling the playing field by applying similar carbon costs to all cement consumed in California, whether they are produced domestically or are imported (e.g., an incremental border carbon adjustments).<sup>8</sup> It could also include measures that limit compliance costs for the cement industry (or other high-risk industries) during carbon price spikes (e.g., industry-specific price ceilings).

Decarbonizing the cement industry will require substantial, long-lived capital investments with long payback periods. Such investments simply aren't possible unless manufacturers are able to pass those costs through to customers without loss of market share (i.e., exacerbating leakage). As a result, the focus on carbon neutrality only heightens the need for an incremental border adjustment or other measures that level the playing field between domestic and imported cement.

## **I. CONCLUSION**

CSCME appreciates the extensive work that CARB has invested in evaluating and presenting policy and technology options as they relate to the state's carbon neutrality goals, as well as the open and thoughtful process of public engagement.

In summary, CSCME applauds CARB's steps taken in support of California's long-term carbon neutrality goals; supports efforts to spur the RD&D critical to successful deployment of industrial-scale CCS; supports measures that would remove barriers to near- and mid-term emissions reductions that build on the industry's progress to date; and reiterates the centrality of minimizing leakage risk to California's progress

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<sup>8</sup> See, e.g., California Air Resources Board, California's 2017 Climate Change Scoping Plan (November 2017) at 73 (highlighting the following potential additional action: "Evaluate and design additional mechanisms to further minimize emissions leakage in the Cap-and-Trade Program (e.g., border carbon adjustment)").

toward emissions reduction goals. Finally, CSCME looks forward to building on its work with CARB to create realistic pathways toward ambitious climate goals.

Sincerely yours,

A handwritten signature in black ink that reads "Erika Guerra". The script is fluid and cursive, with the first name "Erika" being more prominent than the last name "Guerra".

Erika Guerra  
Chairman, Executive Committee  
Coalition for Sustainable Cement Manufacturing & Environment

CC:

Richard Corey, California Air Resources Board  
Edie Chang, California Air Resources Board  
Rajinder Sahota, California Air Resources Board