



May 4, 2026

California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Submitted electronically via:

<https://carb.commentinput.com/?id=pNeRj64MA>

Re: Proposed Amendments to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

Dear California Air Resources Board,

Charm Industrial (Charm)¹ appreciates the opportunity to submit a response to the Modified Text and Additional Documents and Information for the Proposed Amendments to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (15-Day Amendments), issued on April 14, 2026.²

As stated in our response to the proposed amendments issued on January 20, 2026 (45-Day Amendments), Charm greatly appreciates CARB’s leadership and commitment to developing California’s Cap-and-Invest program, which establishes a durable, economy-wide carbon price and a transparent, well-regulated compliance market that can enable long-term investment in high-quality carbon dioxide removal.

We support the proposed 15-Day Amendments and are particularly heartened to see the expansion of the Manufacturing Decarbonization Incentive (MDI) to include key carbon removal and sequestration pathways. In addition to these positive changes, CARB can further accelerate progress toward California’s climate goals by:

- Ensuring that the MDI is optimized to support investment and deployment of carbon removal, capture, utilization and sequestration projects by eligible entities; and

¹ [Charm Industrial](#)

² CARB. “Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information: Proposed Amendments to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms.” https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2026/cap_invest/nc_15d_ci_noticeada.pdf?utm_medium=email&utm_source=govdelivery



- Including the quantification methodologies that will be developed under the Senate Bill (SB) 905 Program within Cap-and-Invest.

About Charm’s Technology

Charm is a California-based company working in support of the state's efforts to rapidly drive down greenhouse gases (GHGs) on the path to carbon neutrality. Charm has developed a proven carbon dioxide removal technology that has already removed thousands of tons of carbon from the atmosphere. Our innovative approach converts biomass residues into a carbon-rich liquid that is safely and permanently stored underground. Agricultural residuals and highly combustible forest residues that would otherwise burn or be left to rot, emitting GHGs into the atmosphere, are instead transformed into a carbon benefit. As part of California’s Electric Program Investment Charge (EPIC) program, Charm conducted an on-site biomass processing and pyrolysis pilot in the Inyo National Forest as part of a larger wildfire fuel reduction project in summer of 2024. To date, Charm has permanently removed 13,063 tonnes of carbon dioxide emissions.³

In addition to the vital climate benefits that negative emissions technologies like bio-oil sequestration provide, Charm’s approach can deliver critically needed air quality, wildfire resilience, and economic benefits in parts of California that most need them, like the Sierras and the Central Valley. At a scale of 4,000 pyrolyzers, Charm could process 38 million MT of woody biomass per year – the quantity of piled biomass from 2.8 million acres of wildfire thinning projects. Based on current biomass disposal costs of \$400-\$2000/acre, this could reduce costs by \$1.1-5.6 billion annually.⁴ In addition to reducing the cost of wildfire mitigation projects, this fleet could deliver \$53.6 billion in health benefits each year from reduced wildfire and pile-burn particulate exposure,⁵ based on CARB’s 2022 estimate that every ton of PM2.5 released from wildfires has health impact costs of \$176,000.⁶

I. GENERAL COMMENTS

To achieve the state’s climate and GHG reduction goals, California’s 2022 Scoping Plan and Governor Newsom call for **20 million metric tons (MMT) of carbon removal in 2030 and 100**

³ [Charm Industrial Ledger](#)

⁴ Barker, et al. [Assessing costs and constraints of forest residue disposal by pile burning](#). 2025.

⁵ [US Forest Service, Piled Fuels Biomass and Emissions Calc, Satellite-Derived PM2.5 Emissions From Wildfires For Air Quality Forecast](#); Estimated 1 ton PM2.5 released from an average of 123 m.t. burned in wildfires and pile burns, 12.5 m.t. wildfire mitigation residuals removed per acre.

⁶ CARB. *2022 Scoping Plan Update*, Appendix I - Natural and Working Lands Technical Support Document. <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-i-nwl-modeling.pdf#:~:text=ERV%20All%20Card%20Outcomes%20,All%20Cause%20Mortality%20Cost%20176406>



MMT in 2045. Therefore, reaching California’s climate goals will depend on the rapid, large-scale deployment of zero- and negative-carbon technologies. This will require a broad spectrum of CDR approaches including, but not limited to, direct air capture (DAC), enhanced weathering and mineralization, marine-based carbon removal (mCDR), bio-oil sequestration, and biomass carbon removal and storage (BiCRS). **As Charm’s work has demonstrated, the use of CDR technology can help accelerate the reduction of GHG emissions and the pace of wildfire mitigation in the state, while also providing key co-benefits, including improving air quality for local communities, creating new jobs, and reusing orphan and idle wells.**

Charm sincerely appreciates the opportunity to provide feedback on the proposed 15-Day Amendments. We are particularly encouraged by staff’s recognition of the role that CDR technologies can play in achieving the state’s ambitious climate goals.

II. CHARM’S RESPONSES TO THE PROPOSED 15-DAY AMENDMENTS.

Charm wishes to express its sincere appreciation for the development of the MDI and, most notably, for the adjustment to the eligibility criteria to include “sequestered or utilized captured carbon dioxide” in §95891(g)(2)(H). In our response to the proposed 45-Day Amendments, we highlighted that “there are hard-to-abate industrial facilities where emissions reductions from energy use and fuel switching will not be feasible” and “without recognizing CDR as an eligible pathway, the [Cap-and-Invest] program risks constraining compliance options and increasing overall decarbonization costs for sectors that lack feasible abatement alternatives.”⁷ For this reason, we are appreciative of the inclusion of sequestered or utilized captured carbon dioxide as an eligible GHG emissions reduction activity in the Manufacturing Decarbonization Incentive Allowance Allocation.

A. Ensure that the MDI is designed to most effectively support investment and deployment of carbon removal, capture, utilization and sequestration projects by eligible entities.

To further strengthen the MDI, we recommend that CARB provide additional detail and guidance on how the allowance can most effectively support investment in carbon removal and sequestration technologies by eligible entities. There are a number of CDR technologies today that can play a key role in helping hard-to-decarbonize sectors reduce and remove GHG

⁷ “Charm’s Comments on the Proposed Amendments to Cap-and-Invest.” March 9, 2026. https://scs-public.s3-us-gov-west-1.amazonaws.com/env_production/oid377/did200184/pid_213315/assets/merged/7g08inxkzb2_document.pdf?v=46001



emissions, and ensuring that the MDI program is clearly designed to enable investments in these technologies is critical.

B. Incorporate the quantification methodology(ies) that will be employed through the Senate Bill (SB) 905 Program into Cap-and-Invest.

As stated previously, Charm appreciates CARB’s acknowledgement of the important role that sequestered and utilized captured carbon dioxide technologies play in the state’s Cap-and-Invest program. To support this, a robust and comprehensive quantification methodology will be critical to providing a strong foundation for scaling permanent carbon removal solutions in alignment with the state’s climate goals.

As currently written, the proposed 15-Day Amendments state that “a Board-approved quantification methodology must be incorporated into the Regulation pursuant to the requirements of section 95852.3.”⁸ Given that CARB will be approving a quantification methodology through its Carbon Capture, Removal, Utilization, and Storage Program under the SB 905 Program, we recommend that the Cap-and-Invest Program adopt the same methodology. In doing so, CARB can streamline implementation and promote program consistency, thereby reducing administrative complexity, lowering barriers to participation, and ultimately providing clearer market signals to support investment and scale.

Charm already adheres to a peer-reviewed protocol (Isometric) that is independently verified for each tonne of carbon removed.⁹ Isometric’s protocol was developed by experts, and underwent peer review and public consultation before publication. This type of rigorous methodology can provide technical background for CARB’s approach, and leveraging the research and consultation that has been done previously can help CARB to accelerate progress.

III. CONCLUSION

Charm is dedicated to supporting California’s path to carbon neutrality by advancing carbon dioxide removal as a critical solution. We value CARB’s leadership on this effort and are eager to continue working together to move this important work forward.

⁸ CARB. “Proposed 15-Day Amendments: Proposed Amendments to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms. Attachment A-1,” pg. 204.

https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2026/cap_invest/nc_a-1_ci_15d.pdf

⁹ [Isometric](#).



Sincerely,

A handwritten signature in black ink, appearing to read "Nora Cohen Brown".

Nora Cohen Brown
Head of Market Development and Policy