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Submitted electronically via ww2.arb.ca.gov

Rajinder Sahota
Deputy Executive Officer for Climate and Research
California Air Resources Board
1001 I Street
Sacramento, CA 95814-2815

RE: Comments on the May 31, 2024, CARB Public Workshop and the Proposed Amendments to the Cap-and-Trade Program Regulations

Dear Ms. Sahota:

Carbon TerraVault Holdings, LLC ("CTV") appreciates the opportunity to comment on the California Air Resources Board's ("CARB" or "the Board") public workshop held on May 31, 2024, regarding potential amendments to the Cap-and Trade ("C&T") program regulations. CTV believes that carbon capture and storage ("CCS") is an integral part of CARB's scoping plan to achieve California's climate goals. Without CCS, California risks losing access to both federal Inflation Reduction Act ("IRA")[1] dollars, as well as private investment to other states. CTV therefore respectively requests that CARB revise the proposed amendments to ensure that: (1) the Mandatory Reporting Rule ("MRR") be revised to account for sequestered greenhouse gas ("GHG") emissions from covered facilities that have deployed CCS, and (2) similarly revise the C&T regulations to clarify that CCS at a covered facility allows for a reduction in the applicable C&T compliance obligation. The requested changes are essential in order to promote CCS projects, end regulatory uncertainty in the state, thereby promoting necessary investment in California which has a vital role in meeting California's climate goals.

About Carbon TerraVault Holdings, LLC

Carbon TerraVault Holdings, a subsidiary of California Resources Corporation ("CRC"), provides services that include the capture, transport and storage of carbon dioxide for its customers. CTV is engaged in a series of CCS projects that inject CO_2 captured from industrial sources into depleted underground reservoirs and permanently store CO_2 deep underground. For more information about CTV, please visit www.carbonterravault.com.

[1] Under the 45Q Tax Credit framework.

About Carbon TerraVault Joint Venture

Carbon TerraVault Joint Venture ("CTV JV") is a carbon management partnership focused on carbon capture and sequestration development, and was formed between Carbon TerraVault, a subsidiary of CRC, and Brookfield Renewable. The CTV JV develops both infrastructure and storage assets required for CCS development in California. CRC owns 51% of the CTV JV with Brookfield Renewable owning the remaining 49% interest. Brookfield Renewable has made an initial $500 million private equity commitment to CTV JV with an option to make additional investments of more than $1 billion assuming it fully participates in future CTV JV projects.

Recommendations

As a California-based company committed to the energy transition, CTV supports CARB's overall goal of achieving carbon neutrality by 2045 and reducing greenhouse gas emissions by 2045 to a level that is 85% below 1990 levels. As discussed in greater detail below, we respectfully request that as part of updating the California Cap-and-Trade Program and MRR, CARB provide detailed CCS permanence and quantification methodologies in the near term—ideally in the next proposed rulemaking.

Representative Projects

CTV is also working with its affiliate CRC on designing and permitting the CalCapture CCS project, which would capture carbon dioxide from the 550-MW natural gas combined cycle Elk Hills Power Plant. CalCapture's Final Investment Decision is planned in 2025, with the expectation that external financing will be dependent on the certainty of properly accounting for CCS under the C&T. CARB's 2022 Scoping Plan requires natural gas plants to support the grid now and in the future as shown in CARB's 2045 modelling.[2] The Scoping Plan models the benefits of CCS on natural gas combined-cycles ("NGCCs") starting in 2045 but California does not need to, nor should it given the urgency of the State's efforts to address climate change, wait until 2045. With regulatory certainty on CCS in C&T and meeting the SB 905 framework by the mandated January 1, 2025 deadline, California could open up the possibility of CCS on NGCCs before 2030 – making a significant contribution to Governor Newsom's goal of 20MMT of carbon removal for 2030. The benefits of CCS on NGCC facilities could be extensive: potential air co-benefits by reducing NO_x, $PM_{2.5}$ and SO_2[3]; economic benefits of thousands of jobs during construction and additional taxes[4]; and a "clean firm" baseload resource, with the ability to support increased renewables on the grid and power thousands of homes and electric vehicles in neighboring

[2] CARB 2022 Scoping Plan Update, December 15, 2022 Board Hearing, 2022 Scoping Plan Update-California's Proposed Strategy for Achieving Carbon Neutrality

[3] Great Plains Institute and Carbon Solutions. (2023). Carbon Capture Co-benefits. https://carboncaptureready.betterenergy.org/wp-content/uploads/2023/08/Carbon-Capture-Co-Benefits.pdf

[4] Rhodium Group. "The Economic Benefits of Carbon Capture: Investment and Employment Estimates for the Contiguous United States." Rhodium Group, Oct2020-Apr2021. https://rhg.com/research/state-ccs/

communities.[5] Action by CARB to account for sequestered CO_2 under the C&T will have the benefit of furthering California's GHG emission reduction goals on faster timeline than currently contemplated *and* continue to shore up the stability of the California electric grid as it transitions to more low carbon resources.

CTV JV is also involved in several new clean energy initiatives, including the Grannus Ammonia and Hydrogen Project, and the Lone Cypress Energy Services blue hydrogen project. The Grannus Ammonia and Hydrogen Project expects to sequester 370,000 metric tons ("MT") of CO_2 annually and produce clean ammonia and hydrogen in Northern California. The project aims to be California's first clean ammonia and hydrogen facility producing 150,000 MT per annum of clean ammonia and 10,000 MT per annum of clean hydrogen. Finally, the Lone Cypress Hydrogen Project, in collaboration with Lone Cypress Energy Services, expects to sequester 100,000 MT of CO_2 per year from a new hydrogen plant, with an expansion plan to 205,000 MT and the production of 60 tons per day of hydrogen.[6] Such projects will constitute new regulated entities with captured CO_2 emissions sources that will have significant compliance obligations under the C&T regulations if they cannot reduce their obligations through CCS. Failure to account for sequestered CO2 under the C&T presents substantial financial and regulatory risks for these projects, and CARB should send clear regulatory signals that it supports projects that further decarbonize historically high-emitting sectors. Moreover, these projects compliment other actions California has taken to transition to a low carbon economic. All three of these projects support Governor Newsome's executive order to phase out internal combustion engines (more commonly known as ICEs), by contributing to a lower grid CI and providing low-CI hydrogen for transportation.[7]

The expectation is that these projects will contribute to our sustainability goals to reduce carbon emissions, promote clean energy and should not be penalized as if they emit CO_2 to the atmosphere when that CO_2 is captured and sequestered. However, any regulatory uncertainty has the potential to adversely impact the financing of or finding co-investors for these projects. CARB could incentivize the proliferation of these projects and others like them, which is fully consistent with its 2022 Scoping Plan and the State's energy transition goals, by amending the Cap-and-Trade regulations as suggested herein. Unnecessarily delaying these much-needed revisions will only serve to further handicap California's ability to develop critical CO_2-reducing projects to meet the State's carbon reduction goals.

In addition to the projects discussed above, CTV JV intends to partner with existing sources of CO_2 emissions considered in CARB's 2022 Scoping Plan, which desire to reduce their

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[5] Energy Future Initiative & Stanford University. "California CCS: Summary for Policy Makers." EFI Foundation, October 2020 https://efifoundation.org/wp-content/uploads/sites/3/2022/03/CaliforniaCCS_SummaryForPolicyMakers_Oct20-2.pdf
[6] Lone Cypress CDMA Press Release, California Resources Corporation (Dec. 7, 2022).
[7] Governor Newsom Announces California Will Phase Out Gasoline-Powered Cars & Drastically Reduce Demand for Fossil Fuel in California's Fight Against Climate Change | Governor of California

compliance cost under the Cap-and-Trade program. These projects rely on this relief, in part, for economic justification.

CTV's Recommendations and Comments on Potential Cap-and-Trade Amendments

CTV recommends CARB incorporate CCS permanence and quantification methodologies in the upcoming Cap-and-Trade program rulemakings without delay.

The California Climate Crisis Act, Assembly Bill ("AB") 1279 established the State's ambitious goal to achieve carbon neutrality by 2045 and contained clear directives from the legislature to CARB on CCS. AB 1279 expressly notes the need to prioritize direct emission reductions and for CARB to identify and implement policies that support the deployment of CCS. While CARB acknowledged the critical role CCS plays in its 2022 Scoping Plan, CARB's existing regulations are inadequate to achieve the Legislature's aggressive goal of supporting direct GHG emission reductions through the use of technologies like CCS because current regulations still do not allow for the quantification of sequestered carbon for purposes of either MRR reporting or Cap-and-Trade program obligations. Consequently, such operators are required to purchase allowances or offsets under the Cap-and-Trade program even if their carbon emissions are 100% captured and sequestered. This creates a paradox by which, despite not emitting a single carbon dioxide molecule to the atmosphere, such net zero sources like the previously mentioned Lone Cypress Hydrogen Facility are treated the same as uncontrolled sources (*e.g.*, a fossil power plant without CCS installed). This paradox has created uncertainty for CTV and the others that are needed to invest the millions of dollars in projects to reduce emissions on existing operations, which could lead to an effective moratorium on the California-based CCS projects.

Other states are quickly surpassing California in developing their own respective CCS permitting regimes and projects. Louisiana was recently granted primary enforcement authority (*i.e.*, primacy) regarding Class VI well permits required for CCS projects.[8] Meanwhile, new state legislation proposed in Illinois promises to streamline the CCS permitting process within the state.[9] With the permitting initiative seemingly passing to these other states, green energy jobs and federal IRA dollars will invariably be redirected to these more aggressive CCS players—away from California and its nascent CCS industry. CARB should not further delay taking the necessary steps to position California to lead the energy transition in the U.S. to a low carbon economy.

Comparison to other states aside, CARB's current CCS approach is also not consistent with CARB's own 2022 Scoping Plan nor with the intent of the California Legislature when it passed AB 1279. Both AB 1279 and the C&T regulations prioritize and seek to incentivize direct GHG emission reductions. If certain hard to decarbonize sources, such as baseload power generating facilities, are forced to only rely on carbon allowance and offset purchases to achieve compliance with C&T requirements, the goals of AB 1279 and the 2022 Scoping Plan cannot be met. For these hard to decarbonize sources, CCS represents the best and shortest path to achieve timely direct emission reductions. And yet, CARB's delay in creating rules for accounting for GHG emissions

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[8] 89 Fed. Reg. 703 (Jan. 5, 2024).
[9] *See* "Carbon Dioxide Transport and Storage Protections Act," HB5814, 103rd General Assembly (2024).

from sources utilizing CCS has the perverse effect of disincentivizing early action by these sources to deploy CCS because they receive no compliance benefit. If CCS is to be rapidly adopted as part of California's energy transition, as well as clear a path to the required data centers for artificial intelligence, these counterproductive regulations must be revised as soon as possible in order to support state goals and achieve the Legislature's express intent to support direct GHG emission reductions.

CARB acknowledged the need for a CO_2 quantification and permanence methodology for CCS projects over a decade ago when it originally adopted the C&T regulations. Since that time, the U.S. Environmental Protection Agency has implemented the federal requirements for quantifying CO_2 emission reductions from CCS projects found at 40 C.F.R. § 98 Subpart RR, approving numerous monitoring, reporting and verification plans without any issues or substantive concerns. In addition, CARB has already adopted a CO_2 permanence methodology for CCS under the Low Carbon Fuel Standard CCS Protocol. There are clear, well-defined guideposts available to help CARB finally define its approach to quantifying GHG emissions from C&T facilities that would seek to utilize CCS. CARB, and California, cannot afford any further delay.

CCS under Senate Bill ("SB") 905 and Assembly Bill 32

The treatment (or rather lack thereof) of CCS by the Cap-and-Trade program has remained unchanged despite previous attempts to raise awareness to this conflict. The lack of progress appears to emanate from SB 905 which, amongst other matters, establishes a unified permitting framework for CCS within California. However, nothing in SB 905 addresses (1) emission reporting under the MRR or (2) the C&T program, so any actions required under SB 905 cannot reasonably be said to prevent or otherwise limit CARB from updating other aspects of its regulations to address CCS. If anything, SB 905 represents a strong signal from the legislature for CARB to press ahead with developing a comprehensive suite of regulations addressing CCS. To end this impasse and ensure there are no further delays permitting CCS projects once CARB ultimately establishes the unified framework under SB 905, CARB should revise the MRR and C&T regulations now to account for GHG reductions for CCS.

CTV is still awaiting guidance from CARB regarding this CCS framework despite a January 1, 2025, adoption deadline required by SB 905. As we approach the third quarter of 2024, this uncertainty continues to impact California's nascent CCS industry. Recently, CARB's spokesperson Dave Clegern explicitly acknowledged this growing uncertainty, stating that "[the] deployment of CCS in California is uncertain given the need for financial, regulatory, permitting, and other support."[10] CARB's spokesperson later added that no CCS projects currently exist in California, in part "because of permitting holdups."[11] Taken together, these statements indicate

[10] Mulkern, Anne C., "*In a First, California Counts on Carbon Capture to Meet its Climate Goals*," E&E News (June 5, 2024) (available at: https://www.eenews.net/articles/in-a-first-california-counts-on-carbon-capture-to-meet-its-climate-goals/).
[11] *Id*.

that CARB is aware of the harmful effects of continued inaction. In light of these recent admissions, CTV therefore urges CARB to complete the CCS rulemaking without delay.

Delaying CCS rulemaking also threatens the net zero goals established by Assembly Bill 32 which requires CARB to develop a Scoping Plan, laying out California's strategy for meeting the state's climate goals.[12] The 2022 Scoping Plan provides a detailed pathway to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85% below 1990 levels no later than 2045. Part of this pathway includes fitting natural gas-fired electric generating units with CCS to provide baseload power, supplementing existing solar, wind, and battery power sources by the year 2045.[13] Yet, CARB is poised to ignore this opportunity to make much needed and long awaited revisions to the current C&T regulations by finally adopting a GHG quantification methodology for CCS, which will provide another pillar of support for the use of CCS as CARB envisioned in the 2022 Scoping Plan. Nearly two years ago, Governor Newsom pressed CARB to speed regulatory actions to help support CCS in California, noting that, [s]imply put, it will not be possible to eliminate all emissions across our economy, so achieving carbon neutrality will rely on carbon sequestration."[14] CARB has clear direction from both the executive and legislative branches, on top of its own acknowledgement of the critical role CCS has to play in meeting the state's climate goals, and should take action now to provide additional regulatory certainty that will support this important industry.

In connection with any final rulemaking, we recommend that CARB adopt the following amendments to the Cap-and-Trade and MRR programs. First, under its Cap-and-Trade program, CARB should finalize the placeholder provision in California Code of Regulations Title 17 § 95852(g) to allow for accounting for GHG sequestered from CCS. Reductions in C&T compliance obligations should be proportional to the amounts of carbon dioxide successfully captured and sequestered in the subsurface. Second, complementary amendments to the MRR program should allow CCS operators to realize back-end emissions reductions through their CCS deployments against their MRR emissions calculations for fuel flow on the front end.

Conclusion

In order to accelerate California's ambitious climate goals, CTV recommends CARB incorporate CCS crediting in its upcoming revisions to the Cap-and-Trade program. We believe that amendments to this program are necessary to ensure consistency with the 2022 Scoping Plan and, importantly, to recognize the importance of California-based energy producers in meeting the state's net zero goals. Without clarity on CCS inclusion in Cap-and-Trade, California risks losing access to both federal IRA dollars, as well as private investment to other states.

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[12] Cal. Code Regs. Title 17, § 38561.(a)-(h) (2023).
[13] *See*, *e.g.*, 2022 Scoping Plan, page 92.
[14] Ltr. From Gov. Gavin Newsom to Liane Randolph, Chair, CARB, p. 3 (Jul. 22, 2022), *available at*: https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf.

CTV appreciates the opportunity to comment on the May 31, 2024, Cap-and-Trade program workshop. We thank CARB for its consideration of our comments and look forward to continued dialogue.

Respectfully submitted,

Chris Gould

Chris Gould
Managing Director