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*Submitted electronically via [ww2.arb.ca.gov](http://ww2.arb.ca.gov)*

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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:

California Resources Corporation (“CRC”) 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. CRC requests that CARB retain the current benchmarks and production allowances for oil production in California.

In addition, Carbon capture and storage (“CCS”) is an integral part of CARB’s scoping plan to achieve California’s climate goals and should be implemented in the near term in order for California to access both the federal Inflation Reduction Act (“IRA”) dollars,<sup>1</sup> as well as significant private investment. Further, 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. CRC therefore respectfully requests that CARB revise the proposed amendments to ensure that: (1) the Mandatory Reporting Rule (“MRR”) accounts 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.

**Summary of Recommendations**

CRC is a California based company committed to the energy transition. We support CARB’s overall climate goal of carbon neutrality by 2045 and have developed projects that align with CARB’s scoping plan. As discussed in greater detail below, we respectfully request that as part of updating the California Cap-and-Trade Program and MRR, CARB:

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<sup>1</sup> Under the 45Q Tax Credit framework.

- Retain the current benchmarks and allowances for oil production in California; and
- Provide detailed CCS permanence and quantification methodologies in the current rulemaking process.

### **California Resource Corporation’s Recommendations on Potential C&T Amendments**

#### **I. CRC recommends CARB retain existing oil extraction benchmarks rather than move to a single benchmark.**

CRC does not support CARB’s proposal to use a single benchmark for crude oil extraction starting with vintage 2031. As CRC previously noted in its comments on the July 27, 2023 public workshop, much of California’s hydrocarbon production is comprised of heavy crude oil which is produced primarily using thermal enhanced oil recovery (“TEOR”) processes.<sup>2</sup> This method of production typically uses injected steam to increase the extraction of crude oil from a given subsurface hydrocarbon reservoir. Heavy crude oil is so prolific in California that most of the state’s refineries are designed specifically to treat this oil grade. As in-state heavy crude oil production becomes disfavored by state regulations, California refineries have been forced to import heavy crudes to compensate for the production shortfall.<sup>3</sup> Such far-ranging effects emphasize the importance of the allowance benchmarks for California-based energy producers under the C&T program.

At present, CARB’s Cap-and-Trade program - recognizing California’s distinctive petroleum geology resource and seeking to limit the unnecessary escalation of out of state emissions - provides indirect concessions and incentives to California-based energy producers. Firstly, as noted in **Table 1**, the Cap-and-Trade program currently provides thermal oil extraction with a higher emissions efficiency benchmark (0.0811) than that of its non-thermal oil extraction counterpart (0.0076). Next, the current regulations give significantly larger allocations per barrel produced using thermal oil production in order to minimize leakage of emissions out of state. As a result, this allocation provided, through budget year 2023, approximately 80 million allowances for oil and gas extraction with the majority using thermal oil production processes.<sup>4</sup>

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<sup>2</sup> California Resources Corporation’s Comments on the July 27, 2023 Cap-and-Trade Program Public Workshop, [https://ww2.arb.ca.gov/system/files/webform/public\\_comments/5331/CRC%20Cap%20and%20Trade%20Comments%2008172023.pdf](https://ww2.arb.ca.gov/system/files/webform/public_comments/5331/CRC%20Cap%20and%20Trade%20Comments%2008172023.pdf).

<sup>3</sup> MathPro Inc., “*Effects of Possible Changes in Crude Oil Slate on the U.S. Refining Sector’s CO<sub>2</sub> Emissions*,” Final Report for the International Council on Clean Transportation, at 3 (Mar. 29, 2013).

<sup>4</sup> CARB Cap-and-Trade Program Workshop Presentation at 58 (July 27, 2023).

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (Ba)	Benchmark Units
Crude Petroleum and Natural Gas Extraction	211111	Thermal EOR Crude Oil Extraction	0.0811	Allowances / Barrel of Oil Eqv. Produced Using Thermal EOR
		Non Thermal Crude Oil Extraction	0.0076	Allowances / Barrel of Non Thermal Crude Oil Eqv.

**Table 1:** Crude Oil Emissions Efficiency Benchmarks (Cal. Code Regs. Title 17, § 95891)

CARB’s new proposal would dramatically simplify **Table 1** through the adoption of a single benchmark for crude oil production. As we explain below, this proposed “one-product, one-benchmark” framework for crude oil emissions is fundamentally flawed since 1) crude oil production cannot be simplified into a “one product” industry, 2) the “one product, one benchmark” principle is not reflected in the current C&T regulations, and 3) the proposed benchmark would result in leakage emissions outside California while actively discouraging state energy production and the associated domestic energy security. As a result, CRC does not recommend CARB adopt the proposed changes to the crude oil extraction benchmarks.

**1) Crude Oil Production is Not a “One Product” Sector.**

All crude oil production is not the same and should not be treated as “one product” as CARB’s proposal suggests. This hydrocarbon resource is dependent on certain intrinsic characteristics (*e.g.*, API Gravity, viscosity, sulfur content, etc.) and broader reservoir characteristics (*e.g.*, porosity, permeability, reservoir depth, etc.) that vary widely based on geographical location. Such characteristics prescribe the necessary extraction techniques used by oil field operators. Accordingly, California’s heavy oil (*i.e.*, high viscosity) reservoirs necessitate enhanced extraction techniques like TEOR for economical production. In contrast, operators producing low viscosity hydrocarbons—those typically outside of California—do not need to deploy such intensive extraction techniques. By adopting a single benchmark, CARB will be ignoring this fundamental production challenge faced by California-based operators.

Further, current Cap-and-Trade regulations provide different emissions benchmarks based on production techniques for other sectors such as Dairy Product Manufacturing, Snack Food Manufacturing, Rolled Steel Shape Manufacturing, and Wineries.<sup>5</sup> As seen in **Table 2**, the regulations provide **five** different benchmarks for steel manufacturing based on production technique. For steel manufacturing, CARB clearly recognizes that different production techniques may be required depending on the steel product being produced (*e.g.*, hot rolled steel, pickled steel). In comparison, CARB’s proposal to collapse crude oil extraction into a single product

<sup>5</sup> Table 9-1: Product-Based Emissions Efficiency Benchmarks, Cal. Code Regs. Title 17, § 95891 (2023).

benchmark runs counter to this pragmatic approach taken for other industrial sectors—seemingly singling out crude oil extraction for this arbitrary treatment.

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
Rolled Steel Shape Manufacturing	331221	Hot Rolled Steel Sheet Production	0.0843	Allowances / Short ton of hot rolled steel sheet
		Pickled Steel Sheet Production	0.0123	Allowances / Short ton of pickled steel sheet
		Cold Rolled and Annealed Steel Sheet Production	0.0520	Allowances / Short ton of cold rolled and annealed steel sheet
		Galvanized Steel Sheet Production	0.0504	Allowances / Short ton of galvanized steel sheet
		Tin Steel Plate Production	0.111	Allowances / Short ton of tin plate

**Table 2:** Steel Emissions Efficiency Benchmarks (Cal. Code Regs. Title 17, § 95891)

**2) The “One product, One benchmark” Principle is Not Reflected in the Cap-and-Trade Regulations.**

In support of its proposal, CARB cites the initial intent of the Cap-and-Trade Program to adopt a “one product, one benchmark” principle for emissions benchmarks. Yet, current CARB regulations for a range of industrial sectors suggest the opposite approach, as seen in the extreme granularity afforded to certain industries based on product production techniques. For example, current CARB regulations provide an emissions benchmark of 0.834 for *fried* potato chips as compared to the 0.517 benchmark assigned for *baked* potato chips.<sup>6</sup> Instead of assigning one benchmark for potato chip production, CARB deliberately assigned two benchmarks based on production technique, thus embracing a “one product, *two* benchmarks” principle—at least for this popular snack food. Similar multiple product benchmarks can be seen listed for other industrial sectors such as Dairy Product Manufacturing, Steel Manufacturing (**Table 2**), and Paperboard Mills.<sup>7</sup> As compared to these other industries, CRC simply requests that the crude oil extraction sector receive equal treatment under the Cap-and-Trade program as other sectors so that its industry is not arbitrarily treated unfairly.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.* The Dairy Product Manufacturing sector regulations list over ten separate product benchmarks, including specific benchmarks for milk powder processing (0.423) and buttermilk powder processing (0.469). The Paperboard Mills sector exhibits similar granularity with separate benchmarks for recycled boxboard manufacturing (0.516) and recycled linerboard manufacturing (0.562).

### **3) Decreasing the Benchmark for Thermally-produced Oil will Increase Emissions Leakage**

AB 32 requires regulations promulgated by CARB to minimize the leakage of emissions out of state.<sup>8</sup> This leakage minimization requirement was added to discourage California regulators from engaging in zero-sum games when targeting emissions reductions (*i.e.*, enacting rules that seemingly reduce California-based emissions, but which instead simply encourage equivalent or greater emissions increases in other jurisdictions). If CARB were to adopt a single benchmark for oil and gas production, this new benchmark would presumably be significantly lower than the current thermal oil production benchmark of 0.0811. Such a reduction would immediately increase production costs to California producers to the financial advantage of out-of-state producers. As the disparity in production costs grows, California's energy markets will favor cheaper crude imports at the expense of cleaner and more highly regulated California-based companies like CRC.

Notably, these out-of-state producers are not subject to the same state regulatory oversight as their California counterparts. This disparity leads us to seriously doubt the accuracy of data underlying the proposed cap-and-trade amendments which often ascribes significantly higher carbon intensity values for California-produced oil as compared to imports. Regarding these valuations, CRC and other California companies diligently report emissions, energy usage, and other data to state regulators every year. Importantly, these submissions are subject to numerous audits and third-party verifications. In contrast, energy companies based in other states (and countries) do not face such oversight and compliance requirements, which invariably contributes to the lower prices of these imported energy supplies in the California energy market.

To summarize, CARB should prioritize the in-state supply of hydrocarbons while incentivizing carbon intensity reductions because California operators are best positioned to deliver less carbon intensive products. The proposed changes to the thermal oil production benchmarks run counter to the GHG reduction goals of the 2022 Scoping Plan by promoting foreign hydrocarbon supplies, in effect shifting emissions to unregulated and uncapped jurisdictions worldwide. CARB can avoid this potential emissions leakage by retaining the existing thermal oil production benchmarks.

## **II. CRC 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

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<sup>8</sup> See *id.* § 38562.(a)(8) (2023).

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 others evaluating long-term investment in multi-million dollar 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.<sup>9</sup> Meanwhile, new state legislation proposed in Illinois promises to streamline the CCS permitting process within the state.<sup>10</sup> 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 allowances 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. CARB’s delay in creating rules for accounting for GHG emissions 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 in agriculture and biotechnology, 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<sub>2</sub> 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<sub>2</sub> 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<sub>2</sub> permanence methodology for CCS under

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<sup>9</sup> 89 Fed. Reg. 703 (Jan. 5, 2024).

<sup>10</sup> See “Carbon Dioxide Transport and Storage Protections Act,” HB5814, 103rd General Assembly (2024).

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 of this omission. The recent lack of progress appears to partly 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.

CRC 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.”<sup>11</sup> CARB’s spokesperson later added that no CCS projects currently exist in California, in part “because of permitting holdups.”<sup>12</sup> CARB recognizes the need for action and has an opportunity to address some of the uncertainty holding back investment in CCS projects today. In light of these recent admissions, CTV therefore urges CARB to begin the CCS rulemaking process 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.<sup>13</sup> 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.<sup>14</sup> 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

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<sup>11</sup> 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/>).

<sup>12</sup> *Id.*

<sup>13</sup> Cal. Code Regs. Title 17, § 38561.(a)-(h) (2023).

<sup>14</sup> *See, e.g.*, 2022 Scoping Plan, page 92.

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.”<sup>15</sup> 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.

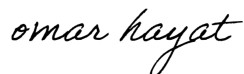
In connection with any final rulemaking, we recommend that CARB adopt the following amendments to the Cap-and-Trade and MRR programs. First, under its Cap-and-Trade program, CARB should finalize the placeholder provision in California Code of Regulations Title 17 § 95852(g) to allow for accounting for 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, CRC recommends CARB revisit its upcoming revisions to the Cap-and-Trade program with respect to CCS and thermal oil extraction benchmarks, in particular. 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. To that end, revisions which finally incorporate CCS crediting are required while also preserving the current thermal oil production benchmarks for California-based energy producers. Furthermore, without clarity on CCS inclusion in the Cap-and-Trade program, California risks losing access to both federal IRA dollars, as well as private investment to other states.

CRC 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,



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Executive Vice President, Operations

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<sup>15</sup> 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>.



### **About CRC and Carbon TerraVault**

California Resources Corporation is an independent energy and carbon management company committed to the energy transition. CRC has some of the lowest carbon intensity production in the US and we are focused on maximizing the value of our land, mineral and technical resources for decarbonization by developing CCS and other emissions reducing projects.

Our core activities involve exploration, production, gathering, processing, and marketing of crude oil, natural gas, and natural gas liquids. We leverage advanced technologies extensively to enhance safety and boost production efficiency across our expansive mineral acreage and diverse portfolio. These cutting-edge technologies allow us to increase production while minimizing the environmental footprint of our oil and gas development operations. For more information about CRC, please visit [www.crc.com](http://www.crc.com).

Carbon TerraVault Holdings, LLC (“CTV”), a subsidiary of CRC, intends to provide services that include the capture, transport and storage of carbon dioxide for its customers. CTV is engaged in the development of a series of CCS projects that expect to inject CO<sub>2</sub> captured from industrial sources into depleted underground reservoirs and permanently store CO<sub>2</sub> deep underground. For more information about CTV, please visit [www.carbonterravault.com](http://www.carbonterravault.com).

Carbon TerraVault Joint Venture (“CTV JV”) is a partnership formed between CTV and Brookfield Renewable focused on carbon capture and sequestration development. The CTV JV develops both infrastructure and storage assets required for CCS development in California. 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.