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CarbonCapture Inc's comments to CEC's California Carbon Management Hub

Additional submitted attachment is included below.

To: **California Energy Commission**
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From: **CarbonCapture, Inc**. - DAC Technology and Project Developer
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RE: Request for Information California Carbon Management Hub Docket # 25-ERDD-01

To whom it may concern,

Please see below CarbonCapture Inc.'s response to CEC's Request for Information: California Carbon Management Hub Docket # 25-ERDD-01. CarbonCapture Inc. (CCI) is a direct air capture technology and project development company located in downtown Los Angeles that was founded in 2019 with a mission to decarbonize the atmosphere by developing and deploying DAC technology.

The CCI team believes that developing carbon management hub(s) in California is vitally important to help the state achieve the goals of AB 1279. A hub-based approach would address infrastructure and partnership challenges, reducing risks associated with technology demonstration and scale-up. We explain our reasoning below and are confident that the information provided will prove helpful in guiding CEC's decision-making.

Question 1: Please describe your interest in partnering with other entities to apply for DOE funding and outline the role and expertise your organization would contribute to a carbon management hub. Include any relevant experience from prior collaborative projects that could help inform and strengthen a hub-based partnership.

In general, CarbonCapture Inc. (CCI) welcomes the opportunity to partner with other CA-based stakeholders to apply for DOE-funding for a carbon management hub. CCI is currently participating as a technology provider with other California-based entities – California Resources Corporation, EPRI, and Absolute Climate – on the DOE-funded, AERA DAC Hub-Kern Project (Topic area 1-FOA 2735). Furthermore, CCI is preparing to submit a TA-3 application for a hub located in Kern County as the sole technology provider for the Department of Energy's current Funding Opportunity Number: DE-FOA-0003442. The aforementioned companies will also be participants on this proposed hub.

CCI would be the technology provider for any carbon management hub. Our company has already deployed its functioning technology which is described in more depth under Question 3. A key differentiator of CCI's approach to technology deployment, compared to competitors, is that our DAC platform is based on modular open system architecture (MOSA) that maximizes opportunities for cost reduction important for helping the state achieve the goals of the Carbon Negative Shot. MOSA enables mass production, rapid development cycles, quick initial deployments, and virtually unlimited scalability. Open architecture enables sorbent upgrades via

standardized plug-and-play cartridges, allowing CCI to leverage emerging innovations in capacity, lifetime, and energy usage across multiple sorbent families (amines, MOFs, hybrids, etc.).

Question 2: Which types of state-level support beyond grants — such as stakeholder convening, streamlined processes, technical assistance, research access, and community engagement — is your organization most interested in, and which does your organization believe would be most effective for advancing carbon management efforts, particularly with regards to a hub- based approach?

CCI believes that state-level support for complying with and streamlining processes associated with the California Environmental Quality Act (CEQA) would be the most effective use of state resources (beyond grants) to advance carbon management efforts. Uncertain timelines and potential litigation under CEQA currently make it very difficult for project developers like us to reach final investment decision (FID). Unless the state of California works to address and streamline processes under CEQA, it will be very difficult for California to become a leader in carbon management project development.

Secondarily, access to and prices for clean energy from renewables, fossil fuels with point source carbon capture, and nuclear are prohibitive for companies of our size especially in comparison with other states in the Gulf Coast – specifically Texas. If California wants to compete for big carbon management hubs, the state government should work to facilitate and streamline access to clean energy and cheaper power purchase agreements (or behind-the-meter generation) for DAC developers. Since the DAC industry writ large is in the initial stages of project deployment and projects benefit the entire state through climate change mitigation, we believe that preferential access and discounted power rates for DAC projects are reasonable.

Finally, the state could consider allowing DAC projects a role in compliance with the Cap & Trade Program. The Low Carbon Fuel Standard currently allows DAC projects to comply, but we believe that the Cap & Trade program should and further that the state could consider a polluter pay's model to spur more DAC projects.

Question 3: What is the current Technology Readiness Level (TRL) of your technology and/or the development stage of your project (e.g., preliminary front-end engineering and design, demonstration)? Please provide potential outcomes from partnering with your organization, including estimated annual carbon capture capacity (in tonnes per year), description of product (if carbon utilization), co-benefits (e.g., hydrogen or water production), and other relevant details.

CCI's technology (the Leo Series module pictured below) is currently at TRL 8. The company first launched this module publicly in June 2024. With the approximate footprint of a shipping container, each highly space-efficient module consists of twelve (12) repeating reactors that can remove 500+ TPA (tons per annum) while delivering CO2 at 95%+ purity. This module serves as the commercial form factor for CCI's upcoming projects. (Please note that CCI has evaluated its TRL by assessing the relevant critical technical element criteria and top-line questions from Department of Energy G 413.3-4A, *Technology Assessment Guide*.) In addition to the module

CCI unveiled in June 2024, the team has been working towards a commercial demonstration (operational in H1 2025). This demonstration will consist of four additional modules, bringing CCI's total deployed nameplate capacity to 2,500 TPA. The DAC modules will be paired with low-carbon power and conditioning (liquefaction) to enable trucking to various offtakers and the generation of carbon removal credits.

CCI is also working towards the first-of-a-kind (FOAK) large-scale project to follow this demonstration. It will ideally grow over phases to hundred of thousands of tons in pursuit of CCI's megaton-scale ambitions. CCI is exploring the state of California for this project and has begun identifying the partners who will help finance the initial phases. Additional support will be critical to project expansion. A project of this size will employ hundreds with high-paying jobs.

Question 4: What challenges are you currently facing, particularly related to funding (e.g., offsetting construction or operating costs, securing offtake agreements)? What challenges – financial or otherwise - do you anticipate in scaling these technologies within a hub-based approach, and are there any challenges unique to establishing a hub in California?

CCI has already raised a Series A worth $80 million but would need to raise significantly more CAPEX funds to be able to develop a large-scale project (>25,000 TPA) in California. The pool of investor funds available for carbon management projects is limited and in the near term could dwindle even further due to waning investor interest and the current federal administration's lack of support for climate initiatives in Washington. These challenges present an existential threat to the entire carbon management industry. Put differently, raising sufficient CAPEX, absent government assistance, will be extremely difficult if not impossible. Thus, either CAPEX from the Department of Energy, the CEC, or ideally both is a prerequisite for CCI to consider developing a large-scale project in California. We note that Canada has a 60% federal investment tax credit (ITC) for developing DAC projects and the province of Alberta added its own 12%

ITC to the federal credit. Support such as this is urgently needed from the CEC to attract climate-meaningful carbon management projects in California.

Furthermore, as mentioned in Question 2, uncertain development timelines from CEQA compliance present a significant barrier to carbon management development as well as expensive clean energy prices. California will be uncompetitive with other U.S. states for large-scale carbon management projects unless the state government helps to mitigate the burdens that these challenges present.

Finally, while we have secured some offtake agreements, they do not cover the 20+-year lifespan of a DAC project. The lack of offtake agreements presents a significant challenge for raising CAPEX funds to build future projects. In order to develop larger, early-stage projects, we will need even more and longer-term offtake agreements which will be nearly impossible to secure without more demand signals from the state or federal government. We believe that CA should implement a procurement program or more long-duration demand signals for DAC to help hubs thrive in CA.