

**DOCKETED**

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**AirMyne Inc \_ Comments on CRISP Program**

*Additional submitted attachment is included below.*



## **Carbon Removal Innovation Support Program**

**Subject: Docket #: 23-ERDD-03**

**Project Title: Carbon Removal Innovation Support Program (CRISP)**

AirMyne, a California company developing a Direct Air Capture (DAC) process designed to achieve industrial scale, is pleased to support the California Energy Commission's Carbon Removal Innovation Support Program (CRISP) as presented in the Wednesday, April 19th Workshop. A representative from AirMyne provided verbal feedback during the public comments portion of the event, but would also like to take this opportunity to submit additional detailed comments based on a request from CEC staff Mr. Krupenich for stakeholders to provide further feedback via the docket.

AirMyne appreciates the outreach, research, and synthesis of stakeholder perspectives the CEC has already performed to prepare a program to catalyze DAC in California. In our judgment as a California-based DAC technology developer, the CRISP program, as presented during the workshop:

- is well balanced in addressing the concerns & needs of diverse stakeholders
- provides early, material support for the DAC ecosystem at a critical juncture
- will help encourage meaningful, substantive discussion between stakeholders including between technology providers & community members

Below we will provide feedback on the proposed Research Test Center, Cost Share for Federal Grants, Applied Research & Demonstration Grants, and Engagement & Outreach.

### **Research Test Center**

The proposal to fund a Research Test Center to help accelerate the piloting of first-of-a-kind DAC technologies is one we whole-heartedly support. A shared-user facilities designed to accommodate the construction, testing, and field operation of pre-pilot scale DAC systems (e.g. modular, transportable systems capable of capturing approximately 1-100 tons of CO<sub>2</sub> per year in continuous operation) would allow multiple companies to perform technical validation of their systems in California, thereby gaining understanding of the specifics needed to operate in field conditions local to the state. With state involvement & oversight at the pre-pilot stage, Californian agencies will be able to more easily evaluate & validate pre-commercial DAC solutions for potential future investments at the pilot phase and beyond.



## Carbon Removal Innovation Support Program

While we see value in all six elements of the Research Test Center as proposed in Slide 11 as presented at the workshop. Allowing technology providers to 1) bring their equipment to the facility 2) connect to electricity/water/steam, 3) access general amenities including office space and conference spaces, and 6) have the means to dispose of captured CO<sub>2</sub>, would be immediately helpful for AirMyne to help us generate system performance data in a controlled way. Items such as 4) access rapid prototyping equipment and mechanical shop space and 5) obtaining technical help, may be less immediately attractive to AirMyne, due to our preference to keep core tech development activities internal to the company. It is unlikely we would seek to use shared shop space or access technical help from a shared facility without detailed provisions to protect the dissemination of our IP.

Below are some responses to questions proposed in Slide 23 of the presentation from the workshop:

We believe the proposed funding for the Research Test Center is adequate. We believe the Research Test Center should prioritize the testing of DAC technologies from California companies which have been successfully validated at “bench scale” but not yet at “engineering scale”. In this case, A Technical Readiness Level (TRL) of greater than 4 and below TRL 8.

To avoid duplicating efforts for the US DOE NETL center in Pittsburgh, experts from that facility should be brought in for a multi-party discussion on how to avoid duplicative efforts; from our perspective, allowing CA companies priority access to the Research Testing Facility, perhaps with a subsidized cost, will provide lower costs & logistical burden when deciding which facility to test at. This will be key to support local development work in state.

AirMyne’s primary need would be space & hookups to perform continuous or semi-continuous, multi-day test cycles, using our own equipment. Ideally companies like AirMyne could use the facility – including the same testing pad or facility as used in any previous tests - for repeated tests of updated/modified equipment, which could be separated by weeks, months, or even years, to benchmark system performance in a controlled environment to previous results.

Ideally, the Research Test Center would pay companies a nominal fee for CO<sub>2</sub> which is collected at a market rate; the CO<sub>2</sub> could then be sold or utilized, e.g. in ETCC research programs. Testing fees should be minimally burdensome to companies and access logistics



### **Carbon Removal Innovation Support Program**

should be minimal, to create clear incentives for California companies to use the Research Test Center rather than seeking less restrictive/burdensome options elsewhere, e.g. outside California.

To support further environmental validation for all users, the Research Test Center could be designed to report to the company a stream of real-time environmental data, such as temperature, humidity, windspeed/direction, weather, as well as utility usage data e.g. water consumption, steam consumption, power consumption at site of the hookups, all from calibrated & well-maintained sensors. This would allow the state to have confidence in the results from the facilities.

We believe data collected from the Research Test Center should have an option to be kept private by the companies who perform the testing, with some data being visible to the CEC and minimal if any data visible to the general public. Given that the Research Test Center's purpose is to incubate a technology which is not yet widely deployed, and for which repeated cycles of prototyping, feedback, and improvement may be needed over many years before they are ready for commercial deployment, it would be counterproductive for companies to have to reveal information or data which is proprietary and which could be could harm or delay their efforts.

Ideally, the Research Test Center offers a neutral, secure, accessible facility located in a central, easily-accessible part of the state, which offers CA companies a low-friction way to schedule, access, & test modular DAC systems in a continuous or semi-continuous way with access to utilities, calibrated sensors, and CO2 offtake/disposition/sequestration/coupling to a utilization pathway, with minimal cost and reporting requirements tied to its use.

### **Cost Share for Federal Grants**

Additional funding described in the workgroup to encourage cost share for federal funding pools, and invest in applied research and demonstration program design, would further enable growth in the DAC market. However in the proposed funding allocation for such a grant, there is a maximum limit for permitting and CEQA review of projects, which we urge staff to reconsider. While this is unlikely to be a pain point this budget year due to the likely small number of projects, as DAC gets closer to technical maturity, regulatory streamlining will be key to enable a rapid deployment at the scale needed for climate action. A few years from now, when the combined impact of community engagement and technological maturity have enabled a



### **Carbon Removal Innovation Support Program**

simplified and understood technological and regulatory permitting process, those numbers could be appropriate, however in the early days of DAC, permitting has the potential to be a significant hurdle for early-stage companies to navigate in the course of planning & constructing complex, first-of-a-kind pilot facilities. Having a mixture of funding to support community engagement around regulatory requirements and risk management could help support a smoother pathway to market for the early stage companies who may be also applying for grants or seeking to use a future research test center.

### **Applied Research & Demonstration Grants**

Broadly speaking, AirMyne is highly supportive of efforts to promote the demonstration of DAC technology in CA at a pre-pilot or pilot scale on the path to commercialization.

In Slide 20, the potential scoring criteria the impacts and benefits for California section is proposed to be a full 30 points, which exceeds both technical merit and approach combined. While we agree all projects should benefit California, a project with greater technical merit and a more methodical approach will inherently be safer, better at reaching commercialization, and scaling to the impact necessary to have a positive impact. However a company focused purely on estimated quantified benefits and lofty future projects may not be able to execute - which puts the scoring bias not on what is doable but rather who can pitch the biggest vision. We urge the CEC to switch those scoring metrics to ensure any state funds being used to advance the technology lead to the most robust technologies moving forward as that quality will help the state be a leader in technologies that can scale and maintain global leadership.

### **Engagement & Outreach**

AirMyne fully supports this element of the plan but we have no additional comments at this time for this topic.

### **Concluding Remarks**

Over the past year, AirMyne has hosted a number of state leaders to openly discuss the state of our DAC technology and the potential for DAC as an industry to address California's climate and workforce goals. We deeply appreciate the time and insights these visitors have shared with us, which help us develop our company's approach in a way that reflects the concerns and goals of

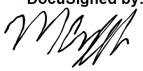


**Carbon Removal Innovation Support Program**

local stakeholders. We remain committed to hosting other California stakeholders who are interested to learn more on DAC and look forward to hosting more site visits in the future. We firmly believe that for this technology to work, the ecosystem of technology providers, communities, and policy makers need to be realistic about what can be done, the timelines in which the technology can reach the market, and critical gaps slowing the deployment of these solutions. If CEC staff would like to visit our facilities, we would be happy to extend an invitation to host them.

AirMyne remains committed to the development & responsible scaling of DAC technology in California, the state we call home. We are happy to offer our staff's expertise as a resource to state agencies if the information and commercial perspectives we bring could help the state make more informed choices regarding allocation of taxpayer funds and the creation of policies and regulations in pursuit of the state's climate goals. We thank you for your time.

Sincerely,

DocuSigned by:  
  
4/26/2023  
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Mark Cyffka

Co-Founder