CARBON CAPTURE CALIFORNIA

April 4, 2022

California Air Resources Board
1001 I Street
Sacramento, California 95814

RE: Comments on 2022 Scoping Plan Update: Initial Modeling Results Workshop on March 15, 2022

The California Carbon Capture Coalition appreciates the opportunity to provide comments in response to the California Air Resources Board (CARB) 2022 Scoping Plan Update: Initial Modeling Results Workshop on March 15, 2022.

The California Carbon Capture Coalition includes a number of leading industries and hundreds of thousands of workers in the state that are critical to successful climate action in California. We are committed to supporting California's efforts to reduce greenhouse gas (GHG) emissions in line with the Paris Agreement in cost-effective ways that drive technology and create and maintain high quality jobs and robust economic growth in the state.

The 2022 Climate Change Scoping Plan Update will play a pivotal role in charting California's path to achieving the state's 2045 carbon net-neutrality goal. The Scoping Plan should be designed to optimize the range of benefits that achieving climate goals in California can provide. California is uniquely positioned to benefit from CCUS across a range of industries in ways that provide significant and lasting greenhouse gas emissions reductions and support new and existing high-quality jobs. CCUS can also deliver air quality and local economic benefits to California communities in many parts of the state.[1] CCUS technologies are being safely deployed at multiple locations across the world today and actively pursued at locations in California currently. These technologies are effectively working to reduce emissions in increasingly cost-effective and innovative ways. As demonstrated in the Initial Modeling Results, the state cannot successfully decarbonize without significant and meaningful contributions from CCUS.

[1] See "The role of carbon capture and storage in the race to carbon neutrality," Peridas and Schmidt, 2021.

California will not achieve its climate goals without CCUS

Achieving California's climate goals will require significant and rapid deployment of CCUS technology. As CARB has recognized throughout this Scoping Plan Update process, the scale and pace of emissions reductions required to achieve California's 2030 GHG target and subsequent 2045 net-neutrality goal must increase substantially from current progress to date.[2] Numerous recent expert analyses have identified CCUS as a critical component of successful climate action strategies globally, nationally and in California, including those from the Intergovernmental Panel on Climate Change, the International Energy Agency, the Energy Futures Initiative, Stanford University, and Lawrence Livermore National Laboratory.

California's 2008 Climate Change Scoping Plan, and subsequent 2013 and 2017 plan updates, all recognized the importance of CCUS in the state's comprehensive climate strategy. Governor Newsom's recent California's Electricity System of the Future report also highlighted the key role that CCUS can play in state climate action.

President Biden's White House Council on Environmental Quality Report to Congress on Carbon Capture, Utilization and Sequestration describes the key role for CCUS technologies in national decarbonization efforts, noting specifically that large scale deployment of CCUS can deliver multiple benefits in addition to reducing greenhouse gases, including reducing emissions of other pollutants and providing support for well-paying union jobs. As part of the federal effort to rapidly scale up CCUS technologies, the Biden Administration and Congress have worked to make billions of federal incentive dollars available to a range of CCUS technology and infrastructure projects. California is uniquely positioned to take advantage of these incentives.

California is uniquely positioned to safely take advantage of CCUS technology

California's history as a national climate leader ideally positions the state play an instrumental role as part of efforts to scale CCUS technologies across the country, and reap the benefits these actions can deliver in California. The state has an unparalleled set of resources to be a global leader in demonstrating the critical role that safe and effective CCUS technologies can play in climate action. Analyses presented by leading experts from Stanford University and Lawrence Livermore National Laboratories at the August 2, 2021 Engineered Carbon Removal Scoping Plan workshop highlighted the abundance of safe, high quality geologic sequestration capacity in the state – much of it strategically located near existing facilities currently suited for safely capturing and transporting CO2.

Analysis from the U.S. Department of Energy concludes that California has more than enough sequestration capacity to safely and permanently store hundreds of years'

[2] See Slide 9, "2022 Scoping Plan Workshop Update," Kickoff Workshop, June 8, 2021; and Slide 4, "2022 Scoping Plan Workshop Update," Engineered Carbon Removal Technical Workshop," August 2, 2021.

worth of the state's total CO2 emissions. CCUS technologies have been safely and successfully practiced for decades across the spectrum of capture, transport and storage activities.[3] These technologies and practices can be applied, refined, and enhanced to enable CCUS to play a meaningful role in California's decarbonization efforts.

California industries possess a depth of technological capability and technical expertise to quickly and safely deploy CCUS. The state has one of most skilled workforces in the world standing at the ready to design, build and operate CCUS projects and infrastructure. As detailed in the February 2021 report Permitting Carbon Capture and Storage Projects in California, California has existing and robust regulatory frameworks to ensure that CCUS projects protect public health, safety and the environment.

CCUS will deliver significant job and economic benefits in California

Deployment of carbon capture, utilization and sequestration technology affords California a significant opportunity to create and preserve hundreds of thousands of high quality, high wage jobs across the state in both new and existing industries. Bringing CCUS projects and infrastructure on-line in California will support a range of employment opportunities across multiple economic sectors including construction and pre-construction, engineering, sciences, project development and ongoing project management. Similarly, CCUS technologies in California can play a key role in helping to manage the costs associated with California's efforts to decarbonize, especially for the most vulnerable Californians.[4] For example, as detailed in "An Action Plan for Carbon Capture and Storage in California," deployment of CCUS technology in the electric sector would reduce power costs by $750 million annually by 2030.

Initial Scoping Plan Modeling Results demonstrate that CCUS is needed to achieve California's 2045 net-carbon neutrality goal.

The Initial Modeling Results presented at the March 15 workshop, conclude that achieving California's net-carbon neutrality goals in "alignment with existing statutes and executive orders" will require CCUS across multiple sectors.[5] The modeling additionally demonstrates the need for rapid deployment of CCUS to realize timely and significant greenhouse gas emission reductions needed to put California on track to achieve net-carbon neutrality by 2045, underscoring the need for the state to move expeditiously to develop a comprehensive policy framework that allows for investment and deployment of CCUS technologies across a range of applications and economic sectors.[6]

The Coalition appreciates CARB's recognition of the important role that CCUS must play. However, as demonstrated in the Initial Modeling Results, an unprecedented level

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[3] See "The role of carbon capture and storage in the race to carbon neutrality," Peridas and Schmidt, 2021.
[4] See "California needs clean firm power, and so does the rest of the world," Long, et. al., 2021.
[5] See CARB Draft Scoping Plan: AB 32 Source Emissions Initial Modeling Results, Slides 5, 6.
[6] See CARB Draft Scoping Plan: AB 32 Source Emissions Initial Modeling Results, Slide 10.

of investment in low carbon technologies and infrastructure across virtually every economic sector in the state is going to be required to reach California's climate goals. Given the scope and scale of this challenge, the state cannot afford to limit the role that CCUS technology can play as part of the effort. The application of CCUS technologies on only one component of the transportation fuels life cycle fails to consider the carbon intensity reduction opportunities available when CCUS is applied to the production of fossil fuels in California. These applications are where current projects are being most heavily pursued and should be robustly considered within the 2022 Scoping Plan Update. Further, California has at least 76 industrial and power generating facilities that with application of CCUS technologies can deliver as much as 60MMT/year in GHG reductions – nearly twice as much as the entire buildings sector in California.[7] As CARB continues to evaluate the Scoping Plan Scenario Alternatives, we urge you to fully account for the greenhouse gas, economic and job benefits that CCUS can deliver when deployed across a robust range of sectors in the state, including how investment in CCUS technology and infrastructure can support a robust array engineered carbon removal technologies that California will need to successfully meet climate goals.

The Coalition appreciates the opportunity to provide input on the Initial Scoping Plan Modeling Results and looks forward to ongoing engagement with CARB and all stakeholders throughout the 2022 Scoping Plan Update process.

Sincerely,

Virgil Welch
California Carbon Capture Coalition

[7] See Stanford University/Energy Futures Initiative (https://sccs.stanford.edu/california-projects/opportunities-and-challenges-for-CCS-in-California).