August 16, 2021

Comments on Public Workshop: 2022 Scoping Plan Update
Engineered Carbon Removal Technical Workshop, August 2, 2021

350 Silicon Valley, representing more than 5000 California residents, is pleased to submit the following comments on the August 2, 2021 Public Workshop: 2022 Scoping Plan Update – Engineered Carbon Removal Technical Workshop.

Like nearly everyone who has studied carbon capture engineering, we hope that it will be very effective, scalable, and free from collateral effects that harm people or the environment. The recent IPCC report makes clear that achieving a stable global warming of only 1.5 to 1.9 C will require large scale carbon capture. "The report's authors estimate that the future of a livable planet now relies, at least in part, on removing anywhere from 100 billion to a trillion tons of carbon already in our atmosphere by the end of the century, depending on how much more we keep on putting into it." (Bloomberg Green) Yet while the technology is still disappointing despite decades of research, the need to address global warming aggressively is urgent;[1] and public policy decisions must reflect the urgency.

Our comments are designed to encourage development of carbon capture technology (CCT) while we move as rapidly and fully as possible to renewable energy, and away from the continued extraction or burning of fossil fuels. To that end we offer the following principles, which we believe should guide CARB's CCT development policy:

1. CCT should not perpetuate the use of fossil fuels, i.e., be used for enhanced oil recovery.
2. In accordance with CARB's mission, CCT should improve public health, and thus not violate environmental justice principles by increasing toxic co-pollutants either in the vicinity of a CCT facility or from trucks serving the facility. (We hope that trucks will be largely ZEV by the time CCT is realized on any significant scale.)
3. Energy for CCT should be renewable to the extent possible.

[1] Lenton, T. M. et al. (2019). Climate Tipping Points-Too Risky to Bet Against. *Nature, 575,* 592-595.

4. CCT and CCT development should be included in the Scoping Plan and subsidized with public funds only if lifecycle research finds net positive capture of CO2e with long term geological storage.

Sequencing is an issue. We believe that at this time, CARB and other government agencies should focus resources and expertise on development and deployment of renewable energy sources and clean electrification—and on ending fossil fuel operations. As discussed in the E3 study commissioned by CARB in 2020, many climate solutions do not have the cost and scalability limitations of current carbon capture technology.[2] The urgency of the climate crisis requires that we pick all of the low-hanging fruit as soon as possible.

Mitigation must be ongoing, and aggressive. More stringent emissions regulation; halting permits for new fossil fuel infrastructure; decreasing fugitive emissions from wells and pipelines; replacing products with high global warming potential (GWP) with products with low GWP; natural sequestration via conservation and regenerative agriculture; and scaling up renewable energy generation are all essential priorities for CARB and other agencies in the short term and moving forward. Some of these have very low costs and are readily verified, e.g., discontinuing permits and strengthening regulation of emissions. None of these measures incentivizes continued dependence on fossil fuel energy.

Due to resource limitations, cost, and low efficacy, we believe that carbon capture technology is unlikely to be scaled up sufficiently to make substantial contributions to the decarbonization of our atmosphere in the near-to-medium term.[3] **For now, we should leave CCT development largely to the private sector, and be prepared to include CCT in public policy and budgets when the technology is closer to being ready for deployment.**

MORAL HAZARD

Arguably the greatest threat CCT poses to efforts to address climate change is the likelihood that carbon intensive industries will tout carbon capture schemes while continuing to extract and promote fossil fuels. In this sense "carbon neutrality" as a future goal is a trap. In fact, as more government funding is allocated to CCT, resources are likely to be diverted from distributed renewable energy, products with low global warming potential, natural sequestration, conservation, all-electric building codes, microgrids, and efficiency.[4] **CARB's CCT development policy must ensure that this shift of resources away from renewables does not occur.**

[2] Energy+Environmental Economics (2020). Achieving Carbon Neutrality in California
[3] Garcia Freites, S., & Jones, C. (2021). A Review of the Role of Fossil Fuel-Based Carbon Capture and Storage in the Energy System. University of Manchester Tyndall Centre.
[4] Ibid.

We believe that smokestack carbon capture, utilization, and storage (CCUS) is the type of CCT that is most likely to prolong the longevity of carbon-intensive industries, disincentivize innovations that decarbonize industry, and prompt lobbying efforts to subsidize CCUS—especially when the captured carbon is used for enhanced oil recovery.[5] Cost/benefit analysis of smokestack CCUS must be rigorous: For instance, the comparative lifecycle costs and net greenhouse gas and toxic emissions of cement plants powered by natural gas, and by natural gas power plants with smokestack CCS, should be computed before CCT is included in the Scoping Plan.

Thank you for considering these comments. We look forward to participating in the next round of Scoping Plan preparation.

Sincerely,

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350 Silicon Valley

[5] Muffett, C., and Feit, S. (2019). Fuel to the Fire: How Geoengineering Threatens to Entrench Fossil Fuels and Accelerate the Climate. Center for International Environmental Law.