August 16, 2021

Honorable Chair Liane Randolph
Honorable Board Members
California Air Resources Board
1001 “I” Street
Sacramento, CA 95814

Re: 2022 Scoping Plan Update – Engineered Carbon Removal Technical Workshop

Dear Chair Randolph and Members of the California Air Resources Board,

PSR-LA and our allies thank you for the opportunity to provide comments regarding engineered carbon removal through Carbon Capture, Utilization and Storage (CCUS) technologies as presented at CARB’s public workshop on August 2, 2021. We urge CARB to reject techno-fix carbon removal strategies, including the ones that:

A. Do not also reduce local air pollution which disproportionately harms and increases the cumulative health burdens faced by frontline and Environmental Justice (EJ) communities, and;
B. Are unproven, unstable, unsafe and costly techno-fixes that incentivize the most polluting industries while keeping much-needed public dollars from going to the most critical solutions on the frontlines of human and ecological harm.

CARB needs to promptly analyze proven and real climate solutions, rather than support carbon storage and utilization technologies that are clearly a public subsidy for the continued operations of the fossil fuel industry. CCUS fails to address climate change and health disparities; it does not meet the goals of AB 32 or AB 197; it is an expensive false solution path that will perpetuate our dependence on fossil fuels; and it will be primarily utilized as polluter subsidies for Enhanced Oil Recovery (EOR), continued oil extraction, and the conversion/expansion of farmlands to grow fuel (corn ethanol).[1]

CCUS technology requires more energy, which will increase pollution and the negative health impacts associated with increased pollution. CCUS also extends the life of fossil fuels and thereby delays a Just Transition to a safer, healthier, more caring world. We cannot continue to reward public dollars to the fossil fuel industry for a bad business model - this scheme would allow the industry to continue externalizing the cost of their business on the backs of the public and EJ communities. This would force communities to pay further with their health, their wellbeing and their lives. This would also squander billions of dollars in public funds that should be spent on real renewable energy like wind and solar, critical climate survival strategies, food sovereignty and holistic solutions pathways that repair the harm done to the health of people and the planet.

We believe that the Scoping Plan must do more to establish a stronger public health framework to this puzzle. We recommend a precautionary approach to how CARB assesses and evaluates carbon sequestration and storage, as well as other climate strategies. **We need to prevent harm.** Therefore, we need to be very clear about the technologies and practices we will use to meet the dual goal of reducing carbon emissions and not increasing the emissions of co-pollutants. This represents a critical opportunity cost - will the state invest public dollars on false solutions that subsidize the fossil fuel industry, or on the diversity of proven, cost-effective and ecologically sensible solutions that benefit public health, equity and the climate?

We ask CARB to prioritize climate solutions that promote a fair and inclusive transition to a sustainable and regenerative economy with justice at its core. This calls for climate investments that work to eliminate existing environmental disparities, shifting the burden away from frontline EJ and Indigenous communities. CCUS plans are too narrowly focused on counting molecules and offsetting carbon emissions, while ignoring local health impacts and high economic risk. CARB's focus on CCUS as a key strategy ignores climate solutions that generate far greater, and more immediate, benefits for community health and well-being, such as improving local air quality, restoring natural ecosystems, and increasing community engagement, vitality and jobs.

<u>We call on CARB to do the following:</u>

1. Do not include CCUS in the Climate Change Scoping Plan and remove its use as a predetermined input to the models for achieving California's carbon reduction goals.
2. Remove CCUS Protocol from the Low Carbon Fuel Standard (LCFS).
3. Incorporate ecologically-based carbon sequestration strategies that are not offsets such as Permaculture and Indigenous Food Sovereignty - which provide co-benefits for environmental justice, public health, jobs creation, ecosystem restoration and community resilience into CARB's modeling and Scoping Plan.
4. Support community-driven solutions that keep fossil fuels in the ground and that advance a Just Transition that benefits frontline workers and communities with family-sustaining, healthy, long-term jobs across many regenerative economic sectors.

[1] https://ieefa.org/it-all-comes-down-to-cost-analysts-argue-carbon-capture-simply-too-expensive/ 2

5. Conduct a robust assessment of real solutions to embed in the CEQA process that poses the fundamental question of "in whose interest are we making decisions" and stop making decisions based on the best interests of the fossil fuels industry.

1. CCUS is a False Solution to the Climate Crisis: CARB should not include CCUS in the Climate Change Scoping Plan as a strategy for achieving California's carbon neutrality goals.

CCUS is a set of technologies currently being promoted by the fossil fuel industry as part of the solution to climate change. By including CCUS in its modeling scenarios, CARB is signaling its desire to include it as a key strategy for reducing carbon emissions in the Climate Change Scoping Plan.

We strongly object to the inclusion of CCUS because these technologies prolong the life of the existing fossil fuel infrastructure, including its harmful impacts on low income communities and communities of color. Utilizing CCUS to reduce carbon emissions provides no local benefits, neither direct benefits nor co-benefits, to EJ communities. On the other hand, CCUS will greatly benefit the fossil fuel industry through sale of captured carbon dioxide for use in marketable industrial and commercial products.[2]

Furthermore, CCUS encourages the continued burning of fossil fuels. "Recovered" oil and natural gas from EOR will then be burned and release additional CO_2into the atmosphere. Using CCUS-CO_2 for EOR will only increase California's GHG emissions. There are 14 operating CCUS projects in the U.S. 13 out of 14 of them (93%) are made profitable by using the captured CO_2 for EOR.[3] There is no guarantee that the CO_2 used in EOR stays underground, so it is indeed a false climate solution.

The most effective way to address the climate crisis is by keeping fossil fuels in the ground and adapting through distributed and decentralized renewable and sustainable energy resources. The recently published Sixth Assessment Report by the United Nations' Intergovernmental Panel on Climate Change (August 2021)[4] warns that climate change has reached a "code red for humanity" and states that the most effective way to address the climate crisis is to keep fossil fuels in the ground, and to rapidly phase out the extraction, transport, refining, and burning of fossil fuels. Timely climate action requires ending new CO_2 emissions into the atmosphere as quickly as possible.

CCUS technologies are not viable. A recent study by Professor Mark Jacobson at Stanford University shows that a carbon capture-equipped coal plant only results in a net 10.5-10.8% CO_2 captured over 20 years.[5] Moreover, the application of carbon capture technology increases the local air pollution and total social costs in relation to the "no capture" scenario. This technology is not as effective as its proponents portray it to be. In order to know whether the amount of CO2 captured exceeds the emissions from CCUS, there should be a life cycle analysis that proves that point. Such life cycle analysis has not been conducted or analyzed by CARB.[6]In addition, captured CO_2 that is not utilized for EOR is planned to be transported to sites for long-term geologic storage in underground wells. The pressurized pipelines used to transport CO_2 may leak causing dangerous accidents and impacts on communities nearby. Furthermore, the risks associated with CO_2 storage are real – a CO_2leakage

[2] https://www.ciel.org/wp-content/uploads/2021/07/Confronting-the-Myth-of-Carbon-Free-Fossil-Fuels.pdf
[3] Global Status CCUS Report 2020, Figure 9.
https://www.globalCCUSinstitute.com/wp-content/uploads/2021/03/Global-Status-of-CCUS-Report-English.pd

f [4] https://www.ipcc.ch/report/ar6/wg1/
[5] https://web.stanford.edu/group/efmh/jacobson/Articles/Others/19-CCUS-DAC.pdf
[6] https://www.frontiersin.org/articles/10.3389/fenrg.2020.00015/full

could asphyxiate nearby residents. Recent studies show that CO_2 has the potential to permanently contaminate underground aquifers, poisoning precious drinking water for millions of people, especially in a water-constrained and drought ridden state like California.[7] This is dangerous, unproven technology that could permanently pollute groundwater aquifers or could be released back to the atmosphere in the event of technological failure, geological or seismic activity, or even cause earthquakes.[8]

CARB & DOE have declared CCUS as a predetermined solution to the climate crisis, without obtaining prior consent from environmental justice communities or the EJAC. It is evident from the draft CARB modeling scenarios that CARB sees CCUS as critical to achieving California's mandated 2045 carbon neutrality goal. Similarly, the U.S. Department of Energy (DOE) is also framing CCUS technology and CO_2 pipelines as critical infrastructure. This is a reckless and irresponsible assumption, for the reasons listed below and reiterated throughout this letter.

The current narratives of CARB and DOE treat CCUS as a proven, ready, and cost effective technology to reach carbon neutrality targets. CCUS is not a ready and cost-competitive technology like solar panels and wind turbines. It is a relatively new and expensive technology that would not be able to reach economic viability without significant public subsidies.[9] Counting on an unproven technology with foreseeable risks for state-wide and national carbon neutrality pathways is a reckless and irresponsible decision.

2. Remove CCUS Protocol from the Low Carbon Fuel Standard (LCFS).

The California Decarbonization Partnership recently submitted an open letter to CARB requesting inclusion of the CCUS Protocol into California's Cap-and-Trade program.[10] The letter is supported by Shell, Chevron, California Resources Corporation, Calpine Corporation and White Energy, all of whom would profit significantly from CCUS infrastructure and continuing fossil fuel use. CARB should remove the CCUS Protocol from California's Low Carbon Fuel Standard (LCFS).

Developing CCUS technology at the industrial sources of CO_2 emissions alone (oil refineries, cement and steel manufacturing, corn-based ethanol plants, etc.) is not only hugely expensive on its own, but it also requires a CO_2 pipeline network. The pipeline industry is employing eminent domain to shield the planning and construction of over 50,000 miles of new planned CO_2 pipelines around the country from public scrutiny and community inputs.[11] There are 1,200 miles of new CO_2 pipelines from corn ethanol plants being planned to parallel the existing oil Dakota Access Pipeline (DAPL) across five Midwestern states.[12] The same violations of Indigenous and human rights, threats to public health, poisoning of drinking water, and destruction of the climate will be

[7] "A quantitative methodology to assess the risks to human health from CO2 leakage into groundwater", https://bit.ly/3yH0mRd

[8] https://www.bu.edu/eci/files/2020/10/2020_Article_.pdf, "Assessing Carbon Capture: Public Policy, Science, and Societal Need", Sekera and Lichtenberger, 2020. p. 12
[9] https://www.theverge.com/2021/8/3/22606395/pipeline-battle-co2-removal-carbon-capture-bipartisan-infrastructure
[10] https://www.c2es.org/press-release/california-decarbonization-partnership-letter-to-carb-on-carbon-capture [11] Princeton Net Zero America report, page 10 https://netzeroamerica.princeton.edu/img/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf
[12]

replicated by planned new CO_2 pipelines that are financially incentivized by the CCUS Protocol included in the LCFS.

The risk of CO_2 pipeline rupture is real and dangerous. $CO_2$is an asphyxiant and can choke nearby victims to death. In 2020, a CO_2 pipeline ruptured in Mississippi, resulting in the hospitalization of 45 people and emergency evacuation of 300 people. Here are the effects described by victims of the pipeline rupture: "*If it's enough to choke vehicles down and stop, think what it's doing to you. That's the reason these folks were down.*" Another person said, *"Starting out, it was really hard to breathe, like I'd run wide open up and down some stairs," he said. "I was really, really winded, like I'd run a mile. Then it was headaches, my ears were popping, I was sick to my stomach and I kind of started getting disoriented...I didn't know I was saying stuff on the radio."*[13]

It's worth noting that this CO_2 pipeline is owned by Denbury Enterprises, a fossil fuel company who used the captured CO_2 to extract more fossil fuels (EOR).

Frontline communities are already overburdened with existing pollution. CCUS and CO_2 pipelines will further harm the frontline communities who do not have the technical capacity and resources to resist the placement of these technologies in their neighborhoods and communities.

CCUS is an Extension of Environmental Racism: CCUS Increases Environmental Injustice for Frontline Communities

Black, Indigenous, and people of color environmental justice (EJ) communities as well as low-income white communities, are already sacrifice zones, with residents experiencing disproportionate pollution burden and suffering from lower life expectancies and higher illness rates as a result of much higher pollution levels. EJ communities are also harmed first and worst by the impacts of a warming climate.

According to Dr. Mark Jacobson's research, there are significant negative health and climate impacts from carbon capture (CC) and direct air capture (DAC) technologies. Not only do carbon capture and use plants only sequester 10.8% of total CO_2, but they also increase air pollution and social cost compared to "no-capture" scenarios.[14] CCUS infrastructure would only increase the local pollution on EJ communities from non-$C0_2$ sources.

CCUS facilities require a great deal of energy to operate – the pollution from natural gas turbine-powered CCUS equipment emits pollution, further harming already overburdened frontline communities. The cumulative increase in energy that is required to power CCUS machinery means increased pollution for EJ communities, locking in long-term polluting infrastructure tied to an extremely expensive technology. There are also significant unaccounted for "upstream emissions" associated with mining, transporting, processing, and burning the natural gas that is used to power CCUS equipment, as well as for those fossil fuels transported to oil refineries. According to CARB's initial modeling, CCUS is not even needed to meet California's carbon neutrality targets.

Carbon dioxide that is successfully captured from a polluting facility such as an oil refinery or cement manufacturing plant does nothing to reduce harmful co-pollutants, and toxic air contaminants, and would only

https://www.clarionledger.com/story/news/local/2020/02/27/yazoo-county-pipe-rupture-co-2-gas-leak-first-responders-rescues/4871726002/

[14] https://web.stanford.edu/group/efmh/jacobson/Articles/Others/19-CCUS-DAC.pdf

increase local community exposure. Thus, CCUS would increase environmental injustice for frontline communities, in direct contradiction to the legislative mandates of AB 32 and AB 197, to reduce health risks to EJ communities.

By utilizing eminent domain and access permissions already granted for oil and gas pipelines, newly constructed parallel CO_2 pipelines would violate principles of Indigenous sovereignty and rights to free, prior and informed consent of both Indigenous and non-Native environmental justice communities. Carbon capture and storage infrastructure hinges on the creation of temporary "man camps" where high concentrations of non-Native men live and work. Concentrations of unaccountable workers with no links to the place where they are working pose an immediate threat to Indigenous women's lives and well-being. Families and friends of missing and murdered Indigenous women, girls and two spirit people (MMIWG2S+) have called for more solidarity on the issue of fossil fuel man camps. Construction of CO_2 pipelines for transporting for EOR fracking or geologic storage would continue to threaten local communities and Indigenous women, girls, and two spirit people.

Sites proposed for long-term geologic storage of CO_2 are in EJ communities that are already disproportionately impacted by pollution. Given that CO_2 pipeline construction depends on Federal tax incentives and subsidies to be profitable, the disproportionate impact on communities of color is a form of environmental racism, and is grounds for a Title VI lawsuit.

3. Incorporate Ecologically-Based, Community Driven Solutions and Incentives that Provide Community Co-Benefits into CARB's Modeling and the Scoping Plan.

CCUS Distracts and Diverts Public Resources from Real Solutions. The CCUS industry is dependent on public subsidies to be cost-effective. **CARB should not waste millions in California taxpayers' dollars on false solutions.** Instead, CARB should evaluate and invest precious public resources in *real solutions* that advance a just transition from our current extractive, fossil-fuel based economy, and move California towards a regenerative, renewable energy and justice-based economy. Ecologically-based and community-driven solutions can both heal the land and result in multiple significant community benefits, such as environmental justice, public health, jobs creation, ecosystem restoration, Indigenous sovereignty, community and climate resilience into CARB's modeling.

Instead of CCUS, CARB should prioritize these solutions:

Regenerative Forest Management. This should be done in accordance with the Traditional Ecological Knowledge (TEK) of California Indigenous Peoples' land stewardship practices, such as cultural burning. In the urban context, research suggests that for every $1 USD invested in urban trees there is an average return of $2.25 USD, not including all ecosystem services and co-benefits.[15]In addition to the environmental and economic benefits, urban forestry can help address long-standing environmental justice concerns and social inequity within urban areas; vulnerable and socioeconomically disadvantaged populations have been historically excluded from the environmental, health, and economic benefits provided by urban tree cover. These programs should not be used as carbon offsets through California's Cap-and-Trade Program or any other carbon pricing program because they justify more fossil fuel pollution.

[15] https://www.fs.fed.us/ucf/supporting_docs/UCF-Brief-Feb2018.pdf

Agroecological Practices & Composting. Agroecological practices are not dependent on fossil-fuel based fertilizers, pesticides, or herbicides, use far less water, and improve air and water quality so our farmworkers and rural communities are safer and healthier. Investments in soil health improves crop yields, making farms and ranches more resilient to climate impacts, thereby protecting our nation's food security. Technologies that turn livestock manure into compost reduce potent methane emissions while reducing water pollutants and displacing the use of chemical fertilizers. These programs should not be used as carbon offsets through California's Cap-and-Trade Program or any other carbon pricing program because they justify more fossil fuel pollution.

Ecosystem Restoration. Restoration of threatened wetlands, coastal, and marine ecosystems provide numerous ecological, economic, and social benefits. Coastal ecosystems sequester up to five times more carbon per acre than tropical forests, particularly with the restoration of eelgrasses and offshore kelp forests.[16] However, the potential of marine sequestration was not referred to in Lawrence Livermore National Laboratory's "Getting to Zero: Options for Negative Carbon Emissions in California" report.[17] These programs should not be used as carbon offsets through California's Cap-and-Trade Program or any other carbon pricing program because they justify more fossil fuel pollution.

Natural Building Materials. Cement production is responsible for between 7 - 10% of GHG emissions globally.[18] CCUS has been touted by its promoters as being essential for capturing CO_2 from "irreplaceable" yet highly-polluting and GHG-intensive industries such as cement and steel manufacturing. However, there are readily available, non-polluting, inexpensive alternatives to these materials. CARB should invest in holistic carbon sequestration strategies that advance environmental justice, that reduce and prevent pollution at the source for frontline communities.

Hempcrete is a viable and non-polluting substitute for cement.[19] Straw bales are also a viable substitute for traditional construction materials that would prevent biomass burning and reduce energy usage of buildings due to its superior insulation.[20]

Unlike engineered CCUS, these are ***proven solutions*** that pose no risk to communities, and that do *not* extend the life of fossil fuel extraction, refining, burning and emissions. These solutions also strengthen community resilience to climate impacts, mitigate catastrophic wildfires, strengthen local economies, build community wealth and ownership opportunities, and improve public health and safety.

4. Support community-driven solutions that advance a just transition and support regenerative economic sectors.

CCUS would create short-term, unsustainable jobs, and does not represent a just transition.

All of the aforementioned true climate solutions could be a source of high-road, union-wage and long-term sustainable jobs, if CARB were to invest public resources that would otherwise go to CCUS projects. CARB's policies should advance a just transition to ensure that workers currently employed in fossil fuel and extractive industries are supported in transitioning to family-sustaining, unionized green jobs or union-wage cooperatives

[16] https://www.scientificamerican.com/article/blue-carbon/
[17] https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf
[18] https://www.linkedin.com/pulse/co2-emission-from-cement-industry-whats-best-estimate-claude-lorea/
[19] https://greenbuildingcanada.ca/2017/advantages-building-hempcrete/
[20] https://www.ecobuildnetwork.org/projects/straw-bale-construction-supporting-documents

that do not harm their communities or the climate. According to the June 2021 study by the Political Economy Research Institute (PERI), "A Program for Economic Recovery and Clean Energy Transition in California," whose findings were endorsed by 20 California unions and Labor Councils, the total just transition program costs for all fossil fuel-based workers, including pension guarantees, re-employment and income-level guarantees, retraining and relocation support, and glide-path income support for workers between 60-64, would cost only between one-hundredth and two one-hundredths of one percent of California's average GDP.[21]

Furthermore, the PERI report found that with the right investments, California could reach the state's climate goals and create one million good jobs by 2030 in the clean energy, manufacturing, infrastructure, and agriculture sectors. This scenario specifically excludes CCUS technology and any jobs that would come with it. **We can create good jobs and reach our climate goals without CCUS.**

Construction of CCUS infrastructure and CO_2 pipeline construction are not only temporary jobs but as unproven, dangerous technologies, CCUS projects would also threaten the health and safety of workers building the CCUS infrastructure and CO_2 pipelines. Additionally, there are millions of miles of defunct oil pipelines that need to be remediated, dismantled and repurposed – this sector represents an untapped source of permanent, family-sustaining and unionized jobs.

While we acknowledge that currently, the non-utility scale residential solar energy industry is almost entirely non-union, there is great opportunity to unionize the residential solar industry by aggregating many projects under Community Choice energy agencies through Project Labor Agreements (PLAs), to build local and renewable energy, energy efficiency, and energy conservation projects at the municipal or regional scale.[22]

We also acknowledge that salary parity is a major issue for many current workers in the fossil fuel industry to sustainably transition to jobs in the clean energy, energy efficiency and energy conservation sector, and that more must be done to ensure we maintain family-sustaining wages and quality standards of living for workers transitioning from fossil fuel industry and extractive sectors to clean energy and regenerative sectors.

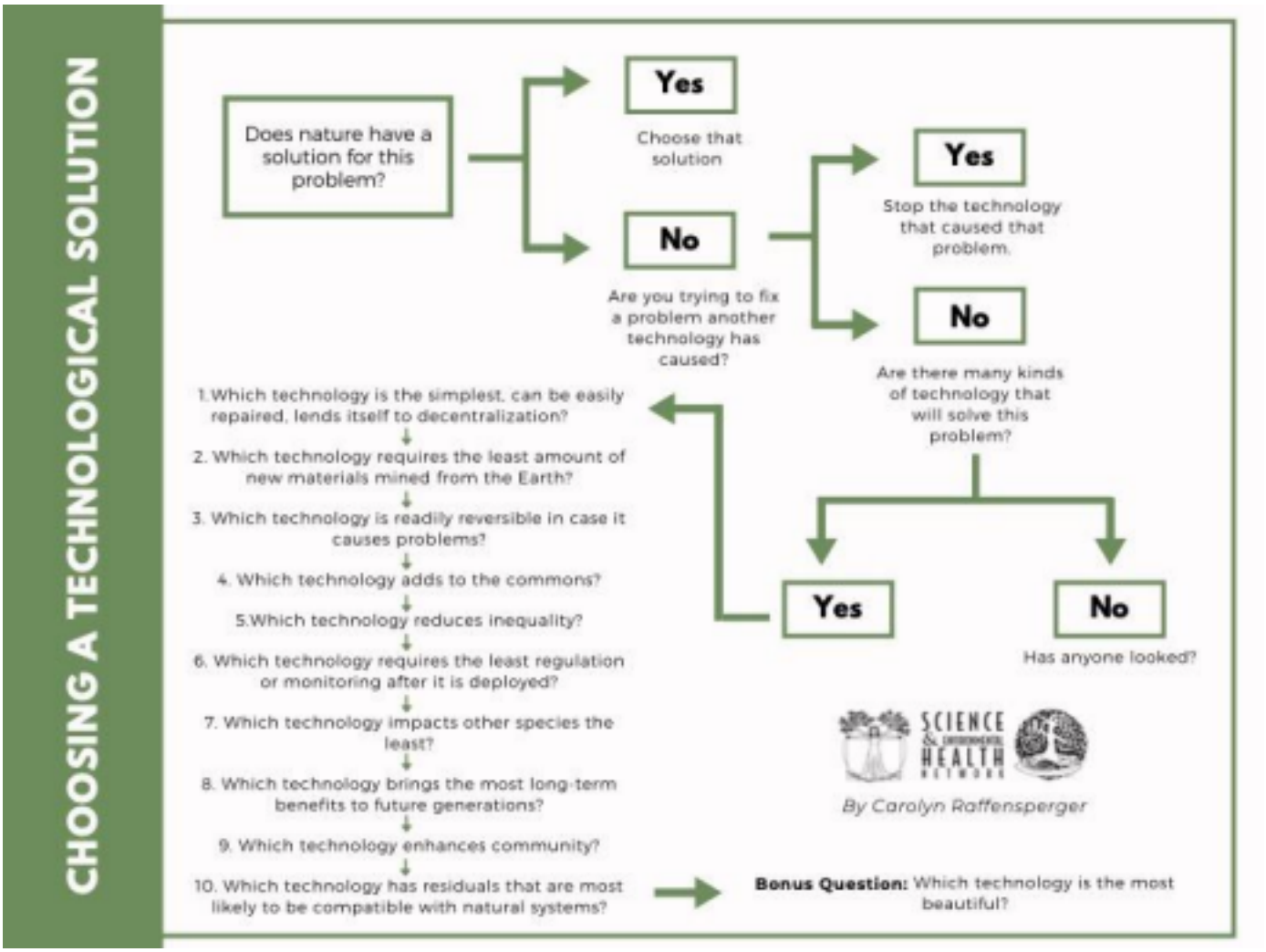
5) Conduct, and embed in the CEQA process, a robust alternatives assessment that poses the fundamental question: "In whose interest are we making decisions?"

We must stop making decisions based on what is in the best interests of the fossil fuels industry. We are concerned that CARB is only listening to stakeholders that have a financial interest in promoting and profiting from CCUS schemes as evidenced by the line up of their workshop presenters.

We are mindful that Direct Air Capture (DAC) technologies do not reduce emissions at their source, as mandated by AB 197, nor result in reduced toxic air contaminants and co-pollutants. They would also increase toxic air pollution in frontline and EJ communities, particularly if not powered by renewable energy. Rather than investing in DAC, that funding should instead be used to directly invest in renewable energy, energy efficiency and conservation, as well as ecologically-based carbon sequestration strategies.

[21] https://peri.umass.edu/component/k2/item/1466-a-program-for-economic-recovery-and-clean-energy-transition-in-california, p. 9 [22] https://insideclimatenews.org/news/27072021/us-energy-transition-unions-climate-clean-energy-fossil-fuels/ 8

Whenever CARB is considering a technologically-based solution, we urge CARB to ask the following questions and adopt the following decision-tree developed by Carolyn Raffensperger, M.A., J.D., Executive Director of the Science and Environmental Health Network.



The signatories of this letter are joined by over 2,000 environmental, environmental justice, and climate justice organizations who have opposed CCUS as a false climate solution. The 1,500 member Climate Action Network International released their position in January 2021, writing, "all government subsidies, loans, grants, tax credit, incentives, and financial support for fossil fuels and technologies that use or otherwise support the continued use of fossil fuels, including CCS, should be phased out as soon as possible."[23] Over 500 U.S. and Canada-based organizations called on lawmakers to reject CCUS as a false climate solution in an open letter in July 2021, calling CCS a "dangerous distraction" that "delays the needed transition away from fossil fuels and other combustible energy sources, and poses significant new environmental, health, and safety risks, particularly to Black, Brown, and Indigenous communities already overburdened by industrial pollution, dispossession, and the impacts of climate change."[24]

[23] https://climatenetwork.org/wp-content/uploads/2021/01/can_position_carbon_capture_storage_and_utilisation_january_2021.pdf
[24] Center for International Environmental Law, "Carbon capture is not a climate solution" at 1 (July 19, 2021), https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter_FINAL_US-1.pdf

In conclusion, we urge CARB to reject CCUS as a false climate solution that would legitimize and extend the extraction and burning of fossil fuels and is not needed to meet our climate goals of reducing GHGs & other pollutants.

Sincerely,

Martha Dina Argüello Physicians for Social Responsibility – Los Angeles	Roger Lin California Environmental Justice Alliance
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