the climate center

June 23, 2022

Contact
theclimatecenter.org
1275 4th Street #191
Santa Rosa, CA 95404
707–525-1665

Governor Gavin Newsom
California State Capitol
Sacramento, California 95814

Liane M. Randolph, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments on Proposed Scoping Plan Pathways

Dear Members of the California Air Resources Board:

Thank you for this opportunity to comment on the Scoping Plan, California's blueprint for how to achieve the state's climate goals. The plan currently recommends Alternative 3, which will set the state on a path to achieve carbon neutrality by 2045. Alternative 3 is simply too late, as is Alternative 4. As goes California, so goes the world. We can and must achieve carbon neutrality followed by net-negative emissions by at least 2035 to have a chance at securing a stable climate.[1]

Additionally, Alternatives 1 and 2 rely on flawed and unproven technologies, and do not properly take into account major opportunities in the natural and working lands, and clean energy sectors. Given these concerns, we urge the Board to adopt a policy proposal that achieves carbon neutrality by 2035, better leverages these opportunities, and removes, or at least reduces, reliance on engineered carbon removal.

1. The Science Calls for Immediate and Rapid Emissions Reductions - 2045 is too late

The existential threat posed by climate change is well-known and is rapidly accelerating its pace. It's "nothing less than a code red for humanity" said the UN Secretary General, referencing the recent Sixth Assessment Report from the United Nations' Intergovernmental Panel on Climate Change (IPCC).[2] Extreme events witnessed over the past several months are literally off the charts and some are not included in climate models that guide government decision making.[3] Over 220 medical journals from across the globe declared in

[1] https://www.sfchronicle.com/opinion/openforum/article/Carbon-neutral-isn-t-good-enough-California-16351149.php
[2] https://news.un.org/en/story/2021/08/1097362
[3] https://www.theguardian.com/environment/2021/jul/02/canadian-inferno-northern-heat-exceeds-worst-case-climate-models

September that "no temperature rise is safe" and our rapidly warming climate poses the greatest single threat to public health.[4] The National Oceanic and Atmospheric Administration officially declared that July 2021 was the hottest month on record globally.[5] After experiencing the hottest March on record, over 1 billion people have been subjected in recent weeks to an off-the-charts record breaking heat dome in India and Pakistan, that has decimated food crops and ignited over 8,000 fires, producing toxic air pollution.[6] And new research shows that global warming has already destabilized the Arctic and Antarctic which will drive even more devastating global impacts.[7] In short, as noted by the IPCC's 6th Assessment Report, we have "a brief and rapidly closing window of opportunity to secure a livable and sustainable future for all."[8]

Never has the climate crisis been more evident in California, where we have been subjected to record-breaking wildfires, heat waves, floods and repeated electricity outages. With the state in the early stages of a multi-decadal drought made severe by climate change, it is clear that the time for accelerated climate action is now. As Governor Newsom has suggested,[9] CARB must act with speed and adopt a proposal that will achieve carbon neutrality by at least 2035 without relying on technologies that will perpetuate environmental injustices on vulnerable communities.

2. The Economic and Social Costs of Doing More Now are Far Less than the Cost of Future Damages

Immediate, bold actions and investments will cost much less than the costs that will be incurred through the adoption of a slower timeline.[10] Indeed, as noted by the modeling itself, the social costs associated with avoided damages are expected to be higher. The Western United States is in the midst of a megadrought made severe by climate change that is likely to continue through at least 2030.[11] In 2015, drought cost California agriculture $2.7 billion and 18,600 jobs.[12] Persistent drought could have devastating and long term consequences for California's agricultural economy. Given that the damages associated with the 2018 wildfires alone totalled $150 billion[13], and the 2019 wildfires cost $80 billion[14], the expected social costs estimated in all of the scenarios – which range from $2.2 billion to $16.3 billion – appear to be vast underestimations.[15]

Energy Innovation recently released a report entitled "Earlier Action Delivers Social and

---

[4] https://www.npr.org/2021/09/07/1034670549/climate-change-is-the-greatest-threat-to-public-health-top-medical-journals-warn

[5] https://www.noaa.gov/news/its-official-july-2021-was-earths-hottest-month-on-record

[6] https://www.arover.net/2022/05/03/india-and-pakistan-suffocate-under-record-heat-dome/

[7] https://www.washingtonpost.com/climate-environment/2021/12/14/climate-change-arctic-antarctic-poles/

[8] *IPCC 6th Assessment, WGII, Feb. 28, 2022*

[9] https://www.gov.ca.gov/wp-content/uploads/2021/07/CARB-Letter_07.09.2021.pdf

[10] https://energyinnovation.org/wp-content/uploads/2021/01/Cost_of_Delay.pdf

[11] https://www.washingtonpost.com/weather/2020/04/16/southwest-megadrought-climate-change/

[12] https://www.scientificamerican.com/article/drought-takes-2-7-billion-toll-on-california-agriculture/

[13] Wang, D., Guan, D., Zhu, S. et al. **Economic footprint of California wildfires in 2018**. *Nature Sustainability*, 2020 DOI: 10.1038/s41893-020-00646-7 https://www.accuweather.com/en/weather-news/california-wildfires-will-cost-tens-of-billions-accuweather-estimates/612548

[14] https://www.accuweather.com/en/weather-news/california-wildfires-will-cost-tens-of-billions-accuweather-estimates/612548

[15] Wang, D., Guan, D., Zhu, S. et al. **Economic footprint of California wildfires in 2018**. *Nature Sustainability*, 2020 DOI: 10.1038/s41893-020-00646-7

Economic Benefits," based on their energy policy simulator modeling. Their modeling identifies a proven set of climate strategies that would get California on track to cut emissions 47 percent by 2030, add $28 billion to the state's economy, create nearly 170,000 jobs, prevent 26,000 asthma attacks, and save households an average of $1,500 in 2030.[16] These outcomes do not appear to be taken into account in Alternatives 1 and 2 modeled by CARB but should be.

Beyond the analysis of simple dollars and cents, it is important to remember that people are dying every day because of our reliance on fossil fuels. The toxic criteria air pollutants emitted near major transportation corridors, power plants, and fossil fuel operations sites inflict the brunt of their poisonous potential upon the communities around them and then spread to inflict harms at the regional level. Addressing these health impacts can reap massive benefits, while also helping fight the climate crisis. One report found that "eliminating fossil fuel emissions from buildings and transportation, for example through electrification, would yield monetized health benefits of $44 billion per year, based on detailed air quality modeling by UC Irvine, and that eliminating emissions from natural gas generators would yield benefits of $1 billion per year."[17] The same report determined that eliminating these emissions would also result in the avoidance of 4,950 premature deaths per year. The widespread availability and affordability of zero-emission technologies means that now is the time for the Board to move to decarbonize vast swaths of California's economy and prevent future harms to the health of the state's communities and to the climate.

3. CARB Must Not Rely on Failed or Unproven Carbon Removal Technologies that Lock in Climate Pollution and Exacerbate Environmental Injustice

In order to achieve carbon neutrality by 2035, both Alternatives 1 and 2 look to engineered carbon removal to make the target date work. As a baseline, CARB must ensure that the Scoping Plan does not rely on carbon capture and storage (CCS) – which operates at the smokestack and does not remove past emissions from the atmosphere – to achieve its goals. None of the existing CCS projects attached to fossil fuel extraction operations have captured the amount of carbon they claimed they would, despite the fact that the technology has existed for decades and should therefore be much more mature.[18] Indeed, the most widely cited "successful" project in Saskatchewan only captures 44% of its carbon dioxide emissions, not the promised 90%. Even if they are successful, the main result is the perpetuation of fossil fuel burning.

To add to this, CCS is expensive, with captured carbon costing as much as $140/ton for power generation.[19] As there are cheaper, proven and natural ways to capture carbon over long periods of time that also provide significant co-benefits for water, biodiversity and the heath of our communities, CARB should include these approaches rather than relying on CCS which has been shown to fail 80% of the time in the US.[20]

---

[16] https://energyinnovation.org/wp-content/uploads/2022/06/California-Energy-Policy-Simulator-Insights.pdf

[17] https://www.ethree.com/new-e3-reports-quantify-the-health-benefits-of-reducing-fossil-fuel-use-in-california/

[18] https://theclimatecenter.org/wp-content/uploads/2022/03/position-paper_carbon-capture-and-storage_The-Climate-Center.pdf, page 5

[19] https://www.worldoil.com/news/2021/8/13/carbon-capture-tech-becoming-cost-effective-as-emissions-price-soars and https://www.iea.org/commentaries/is-carbon-capture-too-expensive

[20] Ahmed Abdulla, Ryan Hanna, Kristen R Schell, Oytun Babacan, David G Victor. Explaining successful and failed investments in U.S. carbon capture and storage using empirical and expert assessments. Environmental Research Letters, 2020; 16 (1): 014036 DOI: 10.1088/1748-9326/abd19e

The use of CCS will perpetuate the use of fossil fuels and all but ensure that the extracted carbon will be emitted into the atmosphere, even if some of the emissions associated with the extraction process are prevented. A recent analysis found that 81% of the carbon captured by the fossil fuel industry has been used for enhanced oil recovery (EOR) , thereby extracting even more carbon that is currently underground to be emitted into the air.[21] The continued operation of these oil and gas facilities unduly burden the communities that surround them, driving ongoing environmental injustice in the form of detrimental health and social impacts. This outcome is unacceptable and CARB must reject the use of CCS for fossil fuel applications and EOR as part of the Scoping Plan.

Direct Air Capture (DAC) technology, which works to remove CO_2 directly from the atmosphere, is in its infancy, expensive, and untested at scale. DAC is currently removing only a tiny fraction of the up to one trillion tons of CO_2 required to achieve carbon neutrality globally.[22] The cost of DAC currently ranges from $500- $1,000/ton in the world's largest commercial facility.[23] That said, we may reach a point where the technology is needed to supplement natural carbon removal efforts, so the cautious exploration of DAC may be warranted, so long as the appropriate guardrails are put into place to protect the well-being of local communities and the environment.

4. Alternatives 1 and 2 Do Not Properly Account for Opportunities in California's Natural and Working Lands

Rather than relying on failed or currently unscalable and expensive technology, CARB should turn to the use of proven, cost-effective and just natural and working lands management approaches to achieve the carbon removal needed for reaching carbon neutrality by 2035 or sooner. CARB's analyses vastly underestimate the sequestration potential found in this sector. A recent report found that the biophysical potential of just the state's working lands to be approximately 103 MMT per year by 2030.[24] And more gains can be made if the models properly incorporate other factors, such as sufficient soil depth.[25] When combined with the sequestration that can be achieved through the proper preservation and management of the state's natural lands, the carbon dioxide removal potential can far exceed CARB's modeled projections. These natural solutions are not at the demonstration stage of technology development. The techniques and strategies are mature and immediately deployable, with only political will needed to make them a reality. Importantly, these solutions are also significantly less expensive than the technological solutions touted in the Scoping Plan. Given these factors, CARB must adopt a policy that leverages the state's natural and working lands to their fullest carbon removing potential.

Per the California Climate and Agriculture Network, a "significant limitation of the croplands scenario modeling is that CARB did not include the benefits of reducing or eliminating nitrous

---

[21] Samira Garcia Freites, Christopher Jones. A Review of the Role of Fossil Fuel Based Carbon Capture and Storage in the Energy System. December 2020. https://foe.scot/wp-content/uploads/2021/01/CCS_REPORT_FINAL.pdf

[22] https://www.iea.org/reports/direct-air-capture-2022

[23] https://www.bloomberg.com/news/features/2021-09-08/inside-the-world-s-largest-direct-carbon-capture-plant

[24] https://theclimatecenter.org/wp-content/uploads/2022/02/The-Climate-Center-Setting-an-Ambitious-Sequestration-Goal-for-CA-WL-Jan-22.pdf

[25] https://calclimateag.org/wp-content/uploads/2022/05/4.4.2022-Public-Comments-on-CARBs-NWL-Modeling-Results-Update-to-2022-Scoping-Plan.pdf

oxide emissions from synthetic fertilizers when farmers and ranchers use healthy soils practices or transition to organic agriculture. This omission undercounts the role of healthy soils practices and organic agriculture, which does not allow use of synthetic fertilizer, in decreasing nitrous oxide emissions."[26] Several of our partner organizations recently submitted comments with proposed solutions to CARB.[27, 28]

In addition, CARB's "maximum" cropland scenario represents fewer acres than are already being treated annually under existing NRCS and CDFA climate smart programs, engaging only 100,000 acres annually. This represents roughly one half of one percent of the state's 20 million acres of cropland. Clearly more ambitious cropland scenarios must be considered.[29]

A 2017 Nature Conservancy publication found that California's natural lands could sequester as much as an additional 17.9 MMT CO2e per year by 2030. The authors explicitly acknowledge that the analysis provides a "conservative estimate of the magnitude of GHG reduction potential from the land base," does not address the potential of the state's 20 million acres of arable lands, and does not "incorporate the full scope of potential land-based mitigation activities, especially those in agricultural lands."[30]

The co-benefits brought about by wide-scale NWL management are numerous and should not be discounted. These include greater crop yields, preserved biodiversity, cleaner air, and increased resilience to climate extremes such as heatwaves and wildfires. NWL management also brings with it myriad benefits specific to water, including improved water retention in soils, better water quality, increased groundwater reserves, and preservation of water supplies. With the state facing a severe, multi-decade drought, it is critical that the state make NWLs one of the primary drivers of the Scoping Plan in order to properly leverage both the climate and water benefits of these natural resources.

5. **The Plan Should Take Advantage of Economic Opportunities in the Clean Energy Sector**

The clean energy sector represents another major opportunity that is underutilized in Alternatives 1 and 2. The cost of clean energy infrastructure has dropped precipitously in recent years. In fact, it is now cheaper to build large-scale renewable energy projects than it is to operate existing fossil fuel plants.[31] This shift in relative economics means that the state should be investing in renewables at an accelerated pace. This will not only drive down the emissions associated with the energy sector, but it will also mean an increase in the number of available jobs related to the projects themselves, as well as the related infrastructure.

Another undervalued strategy in the energy sector is the widespread deployment of distributed energy resources at the local level. Technology exists now to install much more of our clean

---

[26] https://calclimateag.org/cdfas-science-panel-discusses-agricultures-role-in-meeting-state-carbon-neutrality-goal-climate-smart-ag-programs/

[27] https://calclimateag.org/wp-content/uploads/2022/05/4.4.2022-Public-Comments-on-CARBs-NWL-Modeling-Results-Update-to-2022-Scoping-Plan.pdf

[28] https://theclimatecenter.org/wp-content/uploads/2022/03/CCI-Comment-on-CARB-NWL-Modeling-Scenarios-SPU-March-2022.pdf

[29] Ibid

[30] https://www.pnas.org/doi/10.1073/pnas.1707811114#supplementary-materials

[31] https://www.bloomberg.com/news/articles/2021-06-23/building-new-renewables-cheaper-than-running-fossil-fuel-plants

power sources close to, and in many cases right on top of, the load. There is significant potential for local government to use its land use and permitting authority to play a unique role, with help from the state, in facilitating deployment of small-scale solar and storage to meet California's energy needs with very low carbon resources. A 2016 National Renewable Energy Lab paper[32] found that nearly three quarters of the state's electricity needs can technically be met with rooftop solar. Pursuing this approach can build community economic strength and resilience, and can help reduce the need for the vulnerable and expensive long distance transmission lines that have sparked many of the wildfires over the past few years.

United Nations Secretary General Antonio Guterres summed up the situation clearly in response to the latest UN climate science reports: "First and foremost, we must triple the speed of the shift to renewable energy. That means moving investments and subsidies from fossil fuels to renewables, now."[33]

6. Reaching and Exceeding the State's Mandated 2030 Target

As the climate crisis continues to escalate, it is critical that California – and by extension CARB – reassert itself as the global leader in developing and implementing equitable strategies to cut carbon emissions and draw down existing carbon pollution while benefiting our communities. California can and must retake its climate leadership to achieve carbon negative and equity positive because as goes California, so goes the world and there is no time to lose. This Scoping Plan cycle is a key opportunity to demonstrate this leadership. We urge the Board to reject the recommendation to adopt Alternative 3 and to instead adopt a goal of carbon neutrality by at least 2035 through ambitious emissions reductions, accelerated deployment of renewables and scaled up natural carbon removal, while reaching or exceeding the statutory 2030 goals.

7. Local Governments are Critical to Achieving GHG Reduction Goals

According to Appendix D of the draft scoping plan,[34]California local governments have authority over roughly 35% of California's GHG emissions." Local governments have jurisdiction over emissions sources including buildings and energy (e.g. codes and standards), transportation and land use, natural and working lands, material consumption and waste, and public information and education. All local governments are struggling to obtain resources that will allow them to implement sufficient emission reduction strategies to reach state and local goals. The Scoping Plan should provide additional information on ways the State can coordinate with and financially support local and regional governments.

Time is of the essence to secure a safe and stable climate. We urge the Board to adopt a policy proposal that achieves carbon neutrality by at least 2035, leveraging opportunities in the clean energy as well as natural and working lands sectors, and removes, or significantly reduces, reliance on failed or currently unscalable engineered carbon removal. Thank you for the opportunity to comment.

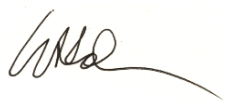
---

[32] https://www.nrel.gov/docs/fy16osti/65298.pdf

[33] https://www.un.org/sg/en/content/sg/articles/2022-04-04/amid-backsliding-climate-the-renewables-effort-now-must-be-tripled

[34] https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp-appendix-d-local-actions_0.pdf

Sincerely,



Ellie Cohen
CEO
The Climate Center

CC: Members, California Air Resources Board
Jared Blumenfeld, Secretary, California Environmental Protection Agency
Wade Crowfoot, Secretary, California Natural Resources Agency
Toni Atkins, Senate President Pro Tempore, California State Senate
Anthony Rendon, Speaker of the Assembly, California State Assembly
Members, Joint Legislative Committee on Climate Change Policy