October 24, 2022

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

Submitted electronically

RE: Sierra Club California and Earthjustice Comments on Recirculated Draft Environmental Analysis for the Draft 2022 Scoping Plan for Achieving Carbon Neutrality

Dear Chair Randolph and Members of the Board:

Sierra Club California and Earthjustice appreciate the opportunity to comment on the Recirculated Draft Environmental Analysis for the Draft 2022 Scoping Plan for Achieving Carbon Neutrality (Recirculated Draft EA).

We are encouraged by a number of changes that the California Air Resources Board's (CARB) made to the Draft Scoping Plan that are reflected in the Recirculated Draft EA pursuant to direction from the Board, Governor Newsom, and the Legislature. Specifically, we are pleased that the Recirculated Draft EA indicates that the Scoping Plan will include:

- No new gas capacity in the electric sector;
- Expanded offshore wind capacity;
- Consideration of climate-friendly and climate-ready homes; and
- Greater Vehicle Miles Traveled (VMT) reductions.

We are also heartened that CARB called for an interagency plan for the phaseout of oil and gas extraction and refining during its September 1, 2022 meeting with the Environmental Justice Advisory Committee (EJAC). These are marked improvements from the May Draft Scoping Plan.

At the same time, the Recirculated Draft EA fails to include several components critical to ensuring that California plans for a combustion-free future in which its most vulnerable communities are protected from pollution harms. As detailed below, CARB should make the following changes to remedy these major flaws and ensure the final Scoping Plan is consistent with governing law and policy:

1. Direct Emissions Reductions: Account for new federal and state incentives that enable greater direct emissions reductions.
2. Hydrogen Blending: Include an accurate and thorough analysis of the risks of blending hydrogen into the gas network and account for new policies that will reduce gas combustion in buildings.
3. Light Duty Transportation: Include zero-emission vehicle (ZEV) sales targets that match the Mobile Source Strategy (MSS), or at a minimum, analyze how these targets will become more feasible given new, significant investments in ZEV infrastructure and incentives**.**
4. Heavy Duty Transportation: Include a ZEV sales target of 100% by 2036 for medium- and heavy-duty vehicles and account for the greenhouse gas (GHG) reductions attributable to the Zero Emission Trucks Measure.
5. Dairies: Examine the impacts of prolonging reliance on liquid manure from Concentrated Animal Feeding Operations (CAFOs), and include direct regulation of CAFO emissions as a mitigation option.
6. Electric Sector: Include a 30 million metric ton (MMT) GHG emission cap on the electric sector by 2030 and a commitment to phase out existing gas plants, starting with those that pollute disadvantaged communities.

We provide further support for each of these points below.

I. Direct Emissions Reductions

The Scoping Plan should account for substantial new federal incentives that enable greater direct emissions reductions.

We are concerned that the changes reflected in the Recirculated Draft EA do not adequately consider important new public investments in zero-emissions technologies from the Inflation Reduction Act (IRA), the Infrastructure Investments and Jobs Act (IIJA), and the California State Budget. If properly implemented, these investments can rapidly reduce GHGs and other harmful emissions that disproportionately burden California's most vulnerable communities. Failure to account for these new incentives will likely slow California's transition away from fossil fuels and hamper its ability to meet the clean energy and carbon neutrality targets recently mandated by the Legislature. We urge CARB to update the Scoping Plan to reflect the impacts that these new incentives and mandates will have on the deployment of zero-emission technologies. Even if CARB opts not to amend the modeling inputs, the Scoping Plan should examine the positive impacts that these federal and state policies will have on faster-than-modeled deployments of clean electricity and electrification of end-uses.

II. Hydrogen Blending

The Scoping Plan should include an accurate and thorough analysis of the many risks associated with blending hydrogen into the gas network and also account for new policies that will reduce gas combustion in buildings.

We remain very concerned that the Recirculated Draft EA continues to contemplate blending hydrogen into the gas network for residential and commercial heating, contrary to the consensus of independent experts that advise against this use. No fewer than 32 studies have discouraged the use of hydrogen for home and commercial heating.[1] Furthermore, the Scoping Plan erroneously assumes 20% of the gas pipeline content will be hydrogen (equating to just 7% of its energy content), despite the fact that a recent study by UC Riverside commissioned by the California Public Utilities Commission (UC Riverside Study) found that safety concerns become evident at blends of 5% by volume (and 2% energy content).[2] Specifically, the UC Riverside Study identified the following risks:

1. Pipeline steels in gaseous hydrogen environments exhibit fatigue accelerated by more than 10x, fracture resistance reduced by >50%, and large effects even with exposure to small amounts of hydrogen (1% by volume).[3]
2. Tests on medium-density polyethylene material "identify limitations in material integrity for mixtures of 20% hydrogen."[4] Specifically, the median performance of plastic test specimens "demonstrates that with the 20% hydrogen blend, the material will rupture in 41% of the time versus no exposure to hydrogen, for a given operating condition."[5]
3. "There are several concerns with respect to the use of hydrogen-natural gas blends in household appliances," including "overheating of components, or . . . increased emissions of nitrogen oxides (NO_x)."[6]

The Draft Scoping Plan and Recirculated Draft EA ignore these alarming findings, even though they assume a hydrogen blend *four times higher* than the levels that trigger the safety concerns detailed above. The Recirculated Draft EA also lacks any discussion of the costly upgrades necessary to safely accommodate the assumed level of blending (if doing so is even physically and logistically feasible).

[1] Jan Rosenow, Is heating homes with hydrogen all but a pipe dream? An evidence review (Oct. 2022), https://doi.org/10.1016/j.joule.2022.08.015.
[2] Arun SK Raju et al., FINAL REPORT - Hydrogen Blending Impacts Study ("UC Riverside Study") (July 2022) at 4, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M493/K760/493760600.PDF.
[3] UC Riverside Study at 67.
[4] *Id*. at 3.
[5] *Id*.
[6] *Id*. at 8.

In addition to these gaping holes in its hydrogen analysis, the Draft Scoping Plan's proposed scenario improperly assumes that the sale of gas-burning appliances are phased out by 2035. Under this scenario, the gas network may still be in operation in 2045, requiring additional decarbonization measures. But this assumption conflicts with the Zero Emission Appliance measure that CARB adopted in its State Implementation Plan in September of this year. The measure requires 100% zero-emission appliance sales by 2030 (not 2035), and in this scenario, the entire low-pressure gas distribution system would be entirely decommissioned by 2045.[7] It is therefore imperative that the Scoping Plan include an updated discussion of the merits of hydrogen blending in the gas system.

III. Light-Duty Transportation

The Scoping Plan should include a discussion about the air and climate impacts of a Light Duty ZEV sales scenario that lags the Mobile Source Strategy, and a discussion about how these targets become more feasible given new, significant investments in ZEV infrastructure and incentives.

In our previous comments, we argued that the light-duty ZEV sales in the May Draft Scoping Plan (and the Advanced Clean Cars II (ACC II) regulation) were less stringent than necessary for passenger vehicles to deliver their proportional share of NOx and GHG reductions. Specifically, we argued that "to contribute toward these reductions [to meet the state's 2031 ozone requirements and 2030 climate goals], emissions from light-duty vehicles need to trend downward before 2030, meaning a majority of market share (e.g. over 50% of sales) should be zero-emissions as early in this decade as possible."[8] And we explained that "[t]he Draft Scoping Plan lags the Mobile Source Strategy by approximately two years and only clears 50% sales by 2029."[9]

Even though the ACC II regulation adopted the targets reflected in the Draft Scoping Plan, we remain concerned that the targets are not stringent enough to achieve our near-term climate goals and federal air quality standards. The Scoping Plan should reflect this reality even if the ACC II targets are lower than what is necessary.

[7] E3, Achieving Carbon Neutrality (Oct. 2020) at 35, https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf.
[8] Sierra Club California and Earthjustice, Draft Scoping Plan Comments at 12, https://www.arb.ca.gov/lists/com-attach/4419-scopingplan2022-AnEGaVE1WHlRJQNi.pdf.
[9] *Id*.

Further, the passage of the IRA and IIJA, along with the significant state investments in zero-emission transportation, significantly improve the feasibility and economic favorability of faster deployment of light-duty ZEV sales than CARB predicted in May. The Scoping Plan should account for these new market drivers. For example, the IRA provides a tax credit of up to $7,500 on the purchase of new ZEVs, on top of the incentives available through California's Clean Vehicle Rebate and Clean Cars 4 All Programs. The IRA also provides a $4,000 rebate for used ZEVs.[10] These significant tax incentives will likely stimulate a major increase in ZEV purchases, while slashing the cost of strategies that hasten ZEV deployment. Indeed, a 2020 Consumer Reports Survey found the largest barrier to ZEV adoption continues to be high upfront cost.[11] Nevertheless, the survey also found that 71% of United States drivers would consider a ZEV for their next vehicle.[12] It follows that the new policies that decrease the cost of ZEVs will generate a major uptick in sales.

The IRA, IIJA and other new utility and private sector investments also address another barrier to ZEV adoption: "range anxiety" due to a perceived lack of available charging infrastructure. Taken together, the new investments will provide at least $3.2 billion for light-duty vehicle charging infrastructure in California in the next five years.[13] This expansion will alleviate range anxiety and further hasten ZEV adoption.

In light of the above developments, the Scoping Plan should include ZEV sales targets that reflect what is necessary given the worsening air pollution and climate crises, and what is possible given the significant new investments in ZEV infrastructure and incentives detailed above. Short of adjusting these targets, the Scoping Plan should at least acknowledge that the targets in the plan are based on a set of assumptions that are no longer accurate. Unless CARB increases or at least qualifies the targets, it will not provide other agencies and lawmakers with an accurate picture of the GHG reductions from aggressive ZEV deployment, thereby hampering clean transportation policies across state government.

IV. Heavy-Duty Transportation

The Scoping Plan should include a ZEV sales target of 100% by 2036 for medium- and heavy-duty vehicles and should account for the GHG reductions attributable to the Zero Emission Trucks Measure.

[10] Plug In America, "Inflation Reduction Act EV Incentives Explained" https://pluginamerica.org/inflation-reduction-act-ira-ev-incentives-explained/.
[11] The EV Price Gap Narrows, "EVs still reach price parity in almost all combinations by 2028 in the most pessimistic case, and by 2025 in the most optimistic scenario," https://www.bloomberg.com/news/newsletters/2021-05-25/hyperdrive-daily-the-ev-price-gap-narrows.
[12] Consumer Reports, Consumer Reports Survey Shows Strong Interest in EVs, *https://www.consumerreports.org/hybrids-evs/cr-survey-shows-strong-interest-in-evs-a1481807376/*.
[13] NRDC, "Reaching Full Charge - How California's Charging Infrastructure Investments Can Enable 100 Percent Light Duty EV Sales by 2035" (Aug. 2022), https://www.nrdc.org/sites/default/files/funding-sources-reaching-full-charge-fs.pdf.

The Recirculated Draft EA fails to include accurate assumptions for the heavy-duty ZEV sales targets, which it continues to list as 100% sales by 2040.[14] We reiterate our dismay that the Scoping Plan diverges from the health-based timeframes dictated by the MSS for its heavy duty transportation inputs. The MSS identifies the level of ZEVs needed to meet air pollution and GHG reduction targets in line with federal obligations under the Clean Air Act and is specifically intended to inform the transportation elements of the Scoping Plan.[15]

While the 2040 date is the current Advanced Clean Fleets proposal, CARB Staff's own Initial Statement of Reasons (ISOR) for this rule makes a compelling climate, public health, and economic case for why this target should be accelerated to 100% medium- and heavy-duty ZEV sales by 2036. A 2036 target along with a reduction of fleet size covered under the rule and an earlier regulation of sleeper cab trucks results in the following benefits when compared to the proposal (which is reflected in the Draft Scoping Plan):

1. Over $34 billion in additional health benefits;
2. An additional 60% reduction in NOx and PM2.5 emissions;
3. A 54% greater direct reduction in GHG emissions;
4. A 2% increase in net cost savings to fleet owners;
5. An additional 230,000 MHD ZEVs on the road by 2050; and
6. Avoiding over 3,000 additional premature deaths.[16]

Importantly, these benefits were calculated without updating the tremendous funding allocations to zero emission vehicles in the IIJA and IRA. This includes 30% tax credits for zero emission commercial vehicles and their chargers, $3 billion in funding for Ports to electrify heavy-duty transportation, $20 billion for manufacturers to retool their plants toward zero-emissions, among other investments that create new tailwinds for a faster transition.[17]

The 85% 2045 reduction target necessitated by the passage of Assembly Bill (AB) 1279 will require CARB to be more ambitious across the plan as a whole. Conforming the Scoping Plan with Alternative 2 in the Advanced Clean Fleets ISOR and accelerating the 100% ZEV sales target in the final plan from 2040 to 2036 will allow for a massive amount of additional GHG reductions.

[14] CARB, Recirculated Draft EA at 17.
[15] CARB, 2020 Mobile Source Strategy at 1, https://ww2.arb.ca.gov/sites/default/files/2021-12/2020_Mobile_Source_Strategy.pdf.
[16] Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation Staff Report: Initial Statement of Reasons at 241, https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf.
[17] Sara Ryan, "Inflation Reduction Act gives truck electrification a shot of adrenaline" (Sept. 12, 2022), https://blogs.edf.org/energyexchange/2022/09/12/inflation-reduction-act-gives-truck-electrification-a-dose-of-adrenaline/.

The Recirculated Draft EA also fails to account for the impact of the Zero Emission Trucks Measure that was recently adopted in the 2022 State Implementation Plan Strategy.[18] This measure would retire the approximately 500,000 combustion trucks remaining on the road after full implementation of the Advanced Clean Trucks and Advanced Clean Fleets regulation, generating substantial GHG reductions. The Scoping Plan should accurately account for these reductions and avoid alternative, more expensive, and less certain means.

V. Dairies

The Scoping Plan should examine impacts from prolonging reliance on liquid manure from CAFOs and discuss direct regulation of CAFO emissions as a mitigation option.

The Recirculated Draft EA fails to analyze the reasonably foreseeable outcome that installations of capital-intensive anaerobic digesters and low-carbon fuel standard revenue will lead to persistent or even growing herd sizes at participating dairies relative to business-as-usual, and certainly relative to the alternative where dairy pollution is regulated. Persistent or accelerated consolidation of dairy herds in confined feedlots that rely on liquid-based manure management can lead to numerous potential harms, including:

1. Increased or prolonged methane generation with the risk of additional methane leakage;
2. Increased or prolonged emissions of VOCs, PM2.5, ammonia, and nitrates;
3. Increased odors and other nuisances for nearby communities; and
4. Accelerated decline of smaller and pasture-based dairies due to distortionary incentives.[19]

The Scoping Plan may not be where regulations are set, but the Recirculated Draft EA improperly suggests that other actors, apart from CARB, will be responsible for determining the outcomes of this sector. Under Senate Bill (SB) 1383, CARB has the authority to set regulations on methane emissions from livestock manure starting on January 1, 2024, and the Scoping Plan is the appropriate place to examine the options and merits of this approach, which has been repeatedly requested by the EJAC.

[18] 2022 State Strategy for the State Implementation Plan at 61 https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf..

[19] *See* Union of Concerned Scientists, "Manure biomethane analysis" (Jan. 6, 2022), 24-lcfs-wkshp-dec21-ws-AHVSN1MhVlpXNQRl.pdf (ca.gov).

Alternative A in the Recirculated Draft EA presents a scenario in which CARB "directly regulates dairies to achieve the SB 1383 methane target, with emphasis on maximizing deployment of alternative manure management strategies, aggressive adoption of enteric strategies by 2030, and increased rate of dairy herd size reduction compared to historic levels."[20] Unfortunately, the Draft EA fails to consider the potential co-benefits that this approach would provide—including avoided methane generation and associated leakage, improved soil carbon sequestration, reduced water consumption, reduced air emissions from dust and truck traffic, and reduced nitrate pollution in water—and instead assumes without support that this strategy would lead to "leakage" or relocation of dairies outside California. This is not an inevitable outcome of a strategy that transitions dairy production in California to a smaller or more sustainable model, especially given the significant potential of reduced dairy demand through healthier diets and a transition to plant-based alternatives.[21] We urge CARB to revise its assumptions about dairy relocation and more carefully examine direct regulation of CAFO emissions in the final Scoping Plan.

VI. Electric Sector

The Scoping Plan should include a 30 MMT GHG emission cap on the electric sector by 2030 and a commitment to phase out existing gas plants, starting with those that pollute disadvantaged communities.

As we have explained in prior comments and as detailed in the Regenerate Campaign's comments, the Draft Scoping Plan improperly projects that the electric sector will emit 38 MMT of GHGs in 2030 and 30 MMT through 2050.[22] These emissions levels are unacceptable given the need to rapidly reduce GHGs and other harmful pollutants from gas plants that disproportionately burden California's vulnerable communities. Indeed, state law requires accelerated emissions reductions.[23]

[20] CARB, Recirculated Draft EA at 289.
[21] Zhonxiao Sun et al., Dietary Change in High-Income Nations Alone Can Lead to Substantial Double Climate Dividend (Jan. 2022) *Nature Food*, https://doi.org/10.1038/s43016-021-00431-5.
[22] Sierra Club California and Earthjustice, Draft Scoping Plan Comments at 5-6, https://www.arb.ca.gov/lists/com-attach/4419-scopingplan2022-AnEGaVE1WHlRJQNi.pdf.
[23] *See* SB 1020 (requiring zero-carbon resources to supply 90% of all retail sales of electricity to California end-use customers by 2035).

What is more, the Draft Plan's high emissions levels for the electric sector are also out of step with an October 7, 2022 ruling in the Integrated Resources Planning proceeding at the California Public Utilities Commission, which proposes a sensitive scenario of 30 MMT by 2030 for transmission planning processes.[24] CARB should accordingly amend the Scoping Plan to match this target. And as noted in our prior comments, CARB should also require 0 MMT by 2035 and clarify that line losses are part of "retail sales" of electricity and cannot be excluded from the "zero-carbon electric system" required by SB 100.[25] Finally, as detailed in the Regenerate Campaign's comments, the Scoping Plan should emphasize the need to retire gas plants across California, starting with those that unjustly burden disadvantaged communities with harmful pollution.

In conclusion, we thank Staff, the Board, and the EJAC for their efforts to improve the Scoping Plan. We urge CARB to make the above changes to the final plan to ensure that California swiftly transitions away from harmful combustion and puts California on track to meeting its critical climate, air quality, and environmental justice goals.

Sincerely,

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[24] CPUC, Ruling Seeking Comments on Electricity Planning Portfolios for 2023-2024 Transmission Planning Process (Oct. 7, 2022) at 3-5, 8, 12, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M497/K509/497509406.PDF.

[25] Sierra Club California and Earthjustice, Draft Scoping Plan Comments at 5-6, https://www.arb.ca.gov/lists/com-attach/4419-scopingplan2022-AnEGaVE1WHlRJQNi.pdf.