September 12, 2022

California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments on Proposed 2022 State SIP Strategy

Dear Board Members and Staff,

Thank you for the opportunity to provide these comments on the California Air Resources Board's Proposed 2022 State Implementation Plan Strategy (SIP), submitted on behalf of RMI, Sierra Club, Emerald Cities Collaborative, SPUR, Natural Resources Defense Council, and Earthjustice. These comments address CARB's proposed statewide Zero-Emission Standard for all new Space and Water Heaters by 2030, and offer the following recommendations:

1. The proposed zero-emission appliance measure should be adopted as a key measure to achieve the state's health, air quality, and decarbonization goals, and to advance environmental justice.
2. A rulemaking to develop the proposed standards, as well as the pursuit of equity-promoting policies, should begin immediately, in partnership with community representatives, to ensure equitable rule implementation by 2030.
3. The zero-emission standards should cover all building end uses to maximize benefits.

Zero-Emission Appliance Standards and Complementary Policies Will Help Achieve California's Health, Air Quality, and Climate Goals, and can advance environmental justice

CARB's proposed standards set a target of zero-emission new space and water heating equipment statewide no later than 2030. CARB rightly acknowledges that this measure must be part of a suite of equity-promoting policies informed by stakeholders. This holistic approach of standards plus complementary policies puts the state on an equitable pathway to attaining air quality standards, improving public health, and achieving carbon neutrality by 2045.

Over half of Californians live in areas that are in nonattainment with federal ozone standards, including the two parts of the country with the highest ozone levels.[1] Zero-emission appliance standards and complementary policies will help attain state and federal air quality standards by reducing emissions of ozone- and particulate-forming nitrogen oxides (NOx), as well as other pollutants. California's buildings emit four times as much NOx as electric utilities and nearly two-thirds as much NOx as the state's 16 million light-duty passenger vehicles.[2] CARB estimates the proposed measure could reduce building

[1] California Air Resources Board, *Proposed 2022 State Strategy for the State Implementation Plan* (Aug. 12, 2022), https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf.
[2] *Id.*; California Energy Commission, *Summary of California Vehicle and Transportation Energy*, https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/summary-california-vehicle-and-transportation.

emissions over 20% in 2037 – just seven years after implementation.[3] These annual emission savings will grow over time as more fossil fuel space and water heaters retire and are replaced with zero-emission alternatives. This underscores both the major pollution reductions achievable through the proposed measure, and the benefits of implementing them before 2030 if CARB and its partners succeed in creating the conditions to do so affordably and equitably.

The pollution reductions from CARB's proposed measure will also yield substantial health benefits. Analysis by Harvard public health researchers indicates that fossil fuel appliance pollution (most of which comes from space and water heating) caused nearly 500 premature deaths in California in 2017.[4] And UCLA researchers have found that if all residential gas appliances in California were replaced with clean-fueled electric alternatives, the reduction in outdoor air pollution would avoid about 350 deaths, 600 cases of acute bronchitis, and 300 cases of chronic bronchitis each year – equal to about $3.5 billion in annual monetized health benefits.[5] CARB's proposed measure would yield even greater public health benefits because it also covers commercial appliances. Another study prepared for the California Public Utilities Commission found that electrifying all gas combustion in California's buildings (not including propane and fuel oil) would avoid 818 premature deaths as well as other health harms, producing over $7.3 billion in monetized health benefits.[6] The majority of these benefits would occur in the South Coast Air Basin, where much of California's worst air quality and most severe health harms occur.[7]

It is essential to prioritize communities of color that are exposed to greater levels of appliance pollution. People of color in California are exposed to 32% more outdoor particulate matter formed from residential gas appliance emissions than Whites.[8] Black communities' exposure is 46% higher than that of White communities' statewide.[9] This shows both the need to prioritize environmental justice communities in the transition to zero-emitting appliances, and the significant environmental justice benefits that CARB's proposed measure could achieve through an equity-centered process and implementation.

In addition to air quality, health and environmental justice benefits, the proposed measure can help achieve California's decarbonization goals, including reducing greenhouse gas (GHG) emissions 40

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[3] California Air Resources Board, *Proposed 2022 State Strategy for the State Implementation Plan* (Aug. 12, 2022), https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf at p. 101-102 projecting 66 tpd of NOx from the current building stock and a potential reduction of 13.55 tpd NOx in 2037.

[4] Based on RMI analysis using median estimates from the results of 3 reduced complexity models used in: Jonathan J. Buonocore (Harvard T.H. Chan School of Public Health) et al., *A Decade of The U.S. Energy Mix Transitioning Away from Coal: Historical Reconstruction of the Reductions in the Public Health Burden of Energy*, 2021 Environ. Res. Lett. 16 054030, https://doi.org/10.1088/1748-9326/abe74c, as well as additional analysis from Jonathan Buonocore, Sc.D, the study's lead author.

[5] Yifang Zhu et al., *Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California* 39, UCLA Fielding School of Public Health (Apr. 2020), https://ucla.app.box.com/s/xyzt8jc1ixnetiv0269qe704wu0ihif7.

[6] Gabe Mantegna et al., *Quantifying the Air Quality Impacts of Decarbonization and Distributed Energy Programs in California*, at 7, 33-34, Energy and Environmental Economics ("E3") (2021), https://www.ethree.com/wp-content/uploads/2022/01/CPUC-Air-Quality-Report-FINAL.pdf.

[7] *Id.* at 35, 43.

[8] Christopher W. Tessum et al., *$PM_{2.5}$ Polluters Disproportionately and Systemically Affect People of Color in the United States*, 7 Sci. Adv. eabf4491, supplementary data file S2 (2021), https://advances.sciencemag.org/content/suppl/2021/04/26/7.18.eabf4491.DC1.

[9] *Id.*

percent below 1990 levels by 2030, and reaching carbon neutrality by 2045.[10] Residential and commercial buildings emit 10% of the state's greenhouse gas emissions.[11] Multiple sources conclude decarbonization of space and water heating is essential to meeting state climate targets, and the California Energy Commission recommends enabling the transition to zero-emission appliances sooner than 2030.[12] CARB's proposed measure will be a critical policy for helping California achieve its ambitious decarbonization targets.

CARB should work with communities to pursue equity-promoting policies immediately to ensure equitable rule implementation in 2030

Zero-emission standards and equity-promoting policies are a critical pairing to ensure an equitable and affordable transition to clean-fueled appliances. The standards will help catalyze the investments and innovation needed to drive the transition, and equity-promoting policies will ensure that the communities most impacted by appliance pollution benefit from the standards. In the SIP, CARB states that it "would engage with community-based organizations and other key stakeholders to incorporate equitable considerations for low-income and environmental justice communities *where feasible*" (emphasis added). However, in order for the standards to deliver equitable outcomes, CARB must fulfill its commitments to engage community organizations and to incorporate equitable considerations (i.e. equity-promoting policies). Zero-emission standards that incorporate equitable considerations for low-income and environmental justice communities are the only feasible standards.

In the SIP, CARB highlights the need for zero-emission standards to be "part of a suite of equity-promoting and complementary building decarbonization policies deeply informed by public process."[13] In order to see this commitment through, CARB should take a leading role to initiate the statewide pursuit of these equity-promoting policies as soon as the SIP is approved, as well as move swiftly to begin the formal rulemaking well in advance of the proposed commitment to bring a proposal before the Board by 2025. CARB should immediately begin convening state, regional and local agencies, market actors, and community representatives to chart out a comprehensive roadmap to equitably decarbonize California's homes and businesses and to engage in the rulemaking process. This collaborative effort should lead to the development and implementation of equity-promoting policies that prioritize benefits for environmental justice communities when transitioning to zero-emission appliances, such as those recommended by over 60 environmental justice organizations, manufacturers, businesses, and organizations.

Importantly, both the process and the outcomes of this multi-stakeholder effort should be inclusive, equitable, and just. Low-income and environmental justice communities should be key partners in determining what an equitable process looks like and in designing policies to deliver equitable outcomes.

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[10] Cal. Air Res. Bd., *Draft 2022 Scoping Plan Update*, slides 6-7 (May 10, 2022), https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf.

[11] Cal. Air Res. Bd., *Draft 2022 Scoping Plan Update* (May 2022), https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf.

[12] E3, *Advancing Carbon Neutrality in California: PATHWAYS Scenarios Developed for the California Air Resources Board* 8 (Oct. 2020), https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf; California Energy Commission, *2021 Integrated Energy Policy Report Volume I: Building Decarbonization* (Feb. 2022), https://efiling.energy.ca.gov/GetDocument.aspx?tn=241599.

[13] California Air Resources Board, *Proposed 2022 State Strategy for the State Implementation Plan* (Aug. 12, 2022), https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf.

This applies to the design of both zero-emission standards and all complementary policies. CARB should plan to engage with these communities immediately following the SIP's approval to begin planning for a broader stakeholder engagement effort and initiating a formal rulemaking.

By initiating a collaborative statewide effort to pursue equity-promoting policies before 2030, CARB can implement zero-emission standards no later than 2030 that drive an equitable and affordable transition to non-polluting appliances.

Zero-Emission Standards Should Apply to All Building End-Uses to Maximize Benefits

As CARB works with community representatives and other stakeholders to design zero-emission appliance standards, it should expand the scope to include all building end uses, such as residential and commercial cooking and clothes drying. CARB can maximize the benefits of this measure by transitioning more appliances to zero-emission alternatives on the same timeline.

As noted in the SIP, CARB could increase its annual NOx savings by nearly 50% if it were to include all other end-uses of natural gas in residential and commercial buildings beyond space and water heating.[14] Considering how many areas of California are failing to attain federal ozone standards, the state should be pursuing all feasible emissions reduction measures as quickly as possible, including all appliance categories with zero-emission alternatives. In fact, California has a legal obligation under the Clean Air Act to come into attainment with federal standards "as expeditiously as practicable," which means it should not delay action for other appliance categories that are already able to feasibly transition to zero-emission alternatives. The South Coast Air Quality Management District has included emissions reductions control measures for various residential and commercial end uses in its 2022 Air Quality Management Plan, including cooking devices, internal combustion engines, and miscellaneous combustion equipment. CARB should similarly consider all of these end uses as it designs zero-emission appliance standards to maximize the NOx and ozone reductions for Californians.

CARB should also consider the substantial benefits to electrifying all end uses on the same timeline, while recognizing that complete decarbonization of the buildings sector will eventually be required to meet climate targets.[15] By delaying action for some appliances, communities will face greater exposure to fossil fuel appliances and the resulting health, indoor and outdoor air quality, and climate impacts. CARB can increase the avoided health and climate costs by enacting standards for all appliances in 2030.

Adopting zero-emission standards for all end uses at once can also deliver cost savings. For newly constructed buildings, developers can reduce costs by installing zero-emission electric appliances and avoiding the need to build out gas infrastructure, while also aligning with other state policies to advance all-electric new construction, such as the 2022 Title 24 building code update and the CPUC's proposal to eliminate gas line extension allowances. Standards covering all end uses could produce savings on operational costs for individuals and society as a whole. As end uses with high energy use like space and water heating are electrified, it will make less economic sense to maintain other gas appliances and the distribution infrastructure needed to fuel them.

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[14] *Id.* at p. 102 projecting a potential reduction of 19.96 tpd compared to 13.55 tpd in 2037.

[15] *See, e.g.*, E3, *Advancing Carbon Neutrality in California: PATHWAYS Scenarios Developed for the California Air Resources Board* 35 (Oct. 2020) (finding that in every decarbonization scenario evaluated for CARB's Scoping Plan, electric appliances reach 100% of new appliance sales), https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf.

Zero-emission standards for all end uses could help consumers completely transition off the gas grid, avoiding fixed charges on their gas bills. And they could help avoid unnecessary buildout of the gas distribution grid, as well as promote a managed and strategic decommissioning of the gas system as neighborhoods fully electrify.

CARB should consider zero-emissions standards that cover all appliance end uses to maximize benefits for Californians, and it should work closely with stakeholders to design each standard thoughtfully and equitably.

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CARB has taken a crucial first step toward aligning California's buildings sector with its air quality and climate goals by proposing statewide zero-emission standards for all space and water heating no later than 2030, along with complementary equity-focused policies. It is essential that as CARB moves forward with this proposal, it centers community input in coordinated decarbonization planning efforts, actively advances parallel policies to promote an equitable transition to non-polluting appliances, and identifies ways to strengthen the standards' scope and ambition as it develops them with partners.

Thank you for considering these comments. We look forward to engaging with CARB as it pursues equitable building decarbonization in California.

Sincerely,

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