

March 27, 2024

California Air Resources Board  
1001 I Street #2828  
Sacramento, CA 95814   
By Email and online

**Re: Comments on the Zero-Emission Space and Water Heater Standards Workshop, February 28, 2024**

Dear Staff of the California Air Resources Board:

My name is Robert M. Gould, MD. As background, after practicing as a pathologist at San Jose Kaiser for over 30 years, since 2012 I’ve been an adjunct assistant professor at UCSF School of Medicine, working as a Collaborator in the UCSF Program on Reproductive Health and the Environment.

I am writing today as President of San Francisco Bay Physicians for Social Responsibility (SF Bay PSR), representing hundreds of health professionals throughout our region. SF Bay PSR speaks for the health of our patients and communities, who are increasingly impacted by the unfolding public and environmental health impacts of global warming, and clearly connected issues of air pollution.

**In this context, we want to thank the California Air Resources Board for showing bold policy leadership in moving California toward zero-emission space and water heater standards. We strongly support CARB’s planning for these zero-emissions appliance standards and urge the Board of Directors to adopt them.**

By developing and implementing these standards, you will greatly contribute to improving the health of communities that we health professionals strive to serve in our practices throughout our careers. In addition, these standards can hopefully have a ripple effect across the nation, as we believe the health and air quality benefits of these rules will be a model for air districts around the country that have been examining similar standards as an emissions reduction strategy.

At the same time, we wish to underscore that in the process to develop and implement these standards, CARB should move carefully to ensure the best outcome for *all* Californians. Based on our experience participating in the process of amending BAAQMD rules to limit nitrogen oxides (NOx) from space and water heaters, we agree with the CARB appliance standards working group, in which we take-part, that the following principles should guide the process of developing zero-emission appliance standards:

* Support public health.
* Evaluate economic and other impacts as they relate to historic and ongoing disparities in clean air, affordable, healthy homes and workplaces, and reliable energy.
* Support climate change mitigation and resilience.
* Encourage manufacturers and the broader workforce to create affordable, reliable, and convenient solutions that support widespread zero-emission space and water heater adoption.
* Coordinate with public agency partners to ensure clarity, alignment, and long-term feasibility for any proposed standards.
* Create an accessible, transparent, and inclusive process.

Concerning public health, we strongly emphasize that the public health benefits from these proposed standards will be profound and historic. When implemented, these standards will significantly improve air quality, community health, and environmental equity, given the following considerations:

The greenhouse gas (GHG) emissions from buildings in California account for approximately 25% of the state’s total emissions, 4 times the NOx of California’s power plants, and space and water heaters account for about 80% of California’s building GHG emissions, per CARB and CEC’s reporting.

Phasing out these building GHG emissions would substantially reduce health harming NOx and particulate air pollution. This would have the greatest health benefit for areas of California that fail to attain National Ambient Air Quality Standards and California Ambient Air Quality Standards for both fine particulate matter (PM2.5) and ozone, which are formed by chemical reactions between NOx and other pollutants.

Gas appliances emit hundreds of pollutants. Most harmful are particulate matter (PM2.5 , ozone, nitrogen oxides (NOx), carbon monoxide (CO), formaldehyde, and [benzene](https://www.nytimes.com/2022/10/20/climate/gas-stove-benzene-california.html). All of these are associated with serious health impacts, collectively including respiratory, cardiovascular, cognitive, reproductive, and developmental harms; cancer; and premature death.

* [A 2020 UCLA](https://ucla.app.box.com/s/xyzt8jc1ixnetiv0269qe704wu0ihif7) study (p.7) found that in California: “If all residential gas appliances were immediately replaced with clean electric alternatives, the reduction of outdoor NOx and PM2.5 would result in 354 fewer deaths, as well as 596 fewer cases of acute bronchitis, and 304 fewer cases of chronic bronchitis annually in California. This is equivalent to approximately $3.5 billion in monetized health benefits over the course of one year. These numbers only account for exposures from outdoor air as a result of residential electrification; a full exposure assessment accounting for indoor exposures would increase the total health benefits and the associated economic benefits of residential electrification.
* Using the Bay Area as an example, moving to zero-emission electric appliances will be a significant boon to community health in the region, with Air District modeling estimating that the PM2.5 reductions from the rule amendments would avert 37 to 85 premature deaths and about 110 new cases of asthma each year in perpetuity. The valuations of health benefits from these rule amendments are estimated to save between $400 million and $890 million annually in ER visits, lost days of work and school avoided, and family members’ lives extended.

Pollution from gas appliances disproportionately harms children and communities of color. The proposed standards are a step forward in ensuring safe, healthy homes for all residents, but particularly those in frontline communities who are affected by the intersection of race, disproportionate housing insecurity, increasing cost of living, and harmful indoor pollution.

* Black and other children of color with asthma are likely the most disproportionately burdened by indoor air pollution from gas appliances.
* Lower-income communities, and those of color are three times more likely to live in an area with poor outdoor air quality, which compounds indoor air pollution health harms.
* Inequity in exposure to air pollution from gas appliances is reinforced by housing conditions which exacerbate exposure, such as: smaller unit size, greater occupant density, with old or unmaintained and often inadequate ventilation which contributes to elevated concentrations of NO2 in lower-income, multifamily buildings – all compounded by the reality that renters often do not want to ask landlords to change or repair appliances for fear of a rent increase or eviction.

To ensure health equity, we urge CARB to also center economic equity in the appliance standards as the two are inextricably linked. The new standards must consider and address the significant barriers and risks faced by low-income communities and communities of color in complying with the standards. We urge CARB to work with other state agencies, and community organizations directly, to gain understanding of community needs, and to adopt strategies for low-income communities including, but not limited to: education and outreach, direct service support, funding for installation and appliances, emergency appliance replacement programs, work force development, and tenant protections.

We also want to emphasize that we do not support hydrogen-fueled appliances as an eligible technology in this regulation for several reasons, most importantly because of the safety and health risks related to using hydrogen appliances, including the high risk of flammability particularly indoors; the health and environmental impacts of dirty hydrogen production close to environmental justice communities; the increased risk of leaks from pipelines; delaying the retirement of the gas system by greenwashing and promoting fossil gas blended with hydrogen; and, the limited energy efficiency of hydrogen compared to electrification.

In light of the potential health benefits of the proposed zero-emission standards, we recommend that CARB highlight the public health consequences of any inaction on disease and mortality. We applaud that CARB staff will be looking at the potential public health benefits from adopting the appliance standards by assessing multiple specific health endpoints (ie., slide 23 of the staff workshop presentation.) We want to ensure that CARB staff are fully supported in collecting the best and most comprehensive evidence from health experts. **We would appreciate meeting with CARB staff to better understand and support your process of public health analysis.**

In summary, SF Bay PSR, representing the voices of hundreds of health professionals, urges the staff and CARB Board to develop and adopt zero-emission appliance standards carefully and promptly to ensure the best outcome for all Californians. Moving to clean, efficient, zero-emission appliances will reduce the many health harms from pollutants, help California air districts attain the federal and state air quality standards, move California toward its climate goals, and save lives~~,~~ with the benefit of greatly improving the health of the poor and communities of color disproportionately burdened by pollution.

With the adoption of these standards, California will become a national leader in reducing fossil fuel appliance pollution to equitably protect health and air quality.

Sincerely,   


Robert M. Gould, MD

President

San Francisco Bay Physicians for Social Responsibility  
548 Market Street, #90725, San Francisco, CA 94104-5401

Physicians for Social Responsibility, San Francisco Bay Chapter  
548 Market Street, #90725, San Francisco, CA 94104-5401