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Additional submitted attachment is included below.



March 16, 2021

California Energy Commission
Docket Unit, MS-4
Docket No. 19-ERDD-01
1516 Ninth Street
Sacramento, CA 95814

RE: RMI comments on Randomized Trial Study to Determine the Impact of Gas Stove Interventions on Children with Asthma

Dear Commissioners and Staff,

On March 2, 2021, the California Energy Commission (CEC) held a workshop to seek input from stakeholders on an upcoming solicitation for research to determine the impact of gas stove interventions on children with asthma. In this letter, RMI is responding to the CEC's call for comments on the study approach. RMI is a nonpartisan, nonprofit that decarbonizes energy systems through transformative, market-driven solutions in the world's most critical geographies to align with a 1.5°C future. Our carbon-free buildings team includes experts who study the impacts of gas appliances on public health.

The CEC is demonstrating crucial leadership in undertaking this randomized control study to empirically quantify the health impact from transitioning from gas to electric stoves. While the health impacts of gas stove pollution, particularly asthma, are well documented, this new research will help quantify the health benefit of switching to a clean electric alternative. Disadvantaged and vulnerable communities are disproportionately affected by the health impacts of fossil fuels which is why it is so critical that the CEC is engaging community organizations early in this process of study design.

In order to ensure that the study will reflect existing knowledge about gas stove emissions, as well as provide data that will help inform policy approaches, the CEC should incorporate the following considerations in study design:

- **Require electric stoves to be either smooth-top or induction (not electric coil stoves)**
 - Electric coil stoves can produce additional pollution from the coils themselves.
- **Include passive and active pollutant monitoring**
 - Most nitrogen dioxide (NO₂) studies to date have relied on passive monitoring (e.g., [Ogawa samplers](#), [Palms diffusion tubes](#)). The study can be more robust by adding some form of active monitoring (to better capture peak and short-term emissions).
- **Consider requiring stove use monitoring systems (SUMS)**
 - Common in international studies measuring cookstove emissions, these small devices can help account for cooking times and durations.

- **Include both kitchen and bedroom monitoring**
 - It will be important to measure the emission concentrations not only in the kitchen, but in other areas of the home where children spend time (e.g., bedrooms).
- **Prioritize the inclusion of smaller square footage homes**
 - Lawrence Berkeley National Laboratory (LBNL) finds that the smaller the home, the greater the emissions concentrations, so including smaller-sized homes will be important to understand the health outcomes of gas stove emissions exposure.
- **Control for ventilation**
 - Add sensors to range hoods to indicate whether occupants run their ventilation while cooking
 - Add sensors to windows to indicate whether an occupant opens a window while cooking
- **Include households who use the gas stove/oven for supplemental heat**
 - Households who rely on the stove for supplemental heat may be at higher risk of exposure to pollutants; this is also a critical environmental justice issue.

The CEC has requested feedback on “other research study areas or programs that could inform or be leveraged to fulfill the goals and requirements of this research effort.” Other groups are currently conducting similar studies, which the CEC could draw on in developing its research plan. In New York state, [WE ACT for Environmental Justice](#) and [PUSH Buffalo](#) are in the process of undertaking a similar stove swap out study ([Out with Gas, In with Justice](#)) in New York, in collaboration with [Columbia University Mailman School of Public Health](#) and [Berkeley Air Monitoring](#). Additionally, the Household Air Pollution Intervention Network ([HAPIN](#)) is conducting an ongoing, worldwide trial of the health impacts of stoves, including gas stoves. Though no households from the U.S. are included, it would be helpful for the CEC team and the selected study team to review the study design and early outcomes, particularly the emissions and health findings related to liquified petroleum gas (LPG) stoves.

The CEC is demonstrating important leadership by committing not only to fund this study, but also to solicit input and feedback from numerous groups, particularly community-based organizations in its design.

Respectfully submitted,

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