****

October 7, 2020

TO: Research Division

California Air Resources Board

 1001 I Street

 Sacramento, CA 95814

RE: 2021-2024 Triennial Research Plan

I am Executive Director of the Energy Institute at Haas at the University of California, Berkeley. The Energy Institute is made up of researchers with deep expertise in conducting policy-relevant research on energy and environmental topics. Our faculty prioritize putting research into action through our outreach to policy and industry practitioners in California and beyond.

Thank you for continuing the triennial planning process. It is very helpful for researchers to see Air Resources Board (ARB) priorities over a longer time horizon.

I would like to recommend several research areas for ARB to include in the next triennial plan. I also have recommendations concerning the process that ARB uses to select projects for funding:

*Engage with Researchers to Develop Behavioral Economics Projects*

I am excited to see Behavioral Economics featured in the plan. The real-world impact of regulations to reduce air pollution can be highly dependent on how businesses and individuals respond to the regulations. For example, a regulation that, while cost effective, raises the up front cost of a new piece of equipment, could lead consumers to hang on to their older, more polluting equipment for longer. Analytical techniques such as randomized controlled trials can be used to rigorously uncover behavioral responses and design nudges to encourage the behavior sought by the regulation. California’s universities are home to many nationally-recognized experts on behavioral economics, and a commitment of funding in this area will help to attract researchers to address the challenges ARB is focused on.

I would encourage the research division to hold workshops and/or issue broadly defined solicitations to craft specific research priorities for the new behavioral economics initiative.

*Research on Solutions to Equitably Share the Benefits and Costs of Air Regulations*

New data sources, such as from satellites, and models, often funded by ARB, are enabling a much more fine-grained analysis of the geographic spread of pollution and of pollution reductions. Fine-grained estimates of how the costs of regulations will be experienced can also be modeled much more precisely today. ARB should support research that makes use of these data sources and models to develop policies that take into account historical pollution and income disparities.

Two specific applications for research in this area related to greenhouse gas emissions are on methane emissions from agricultural sources and agricultural nitrous oxide emissions, both of which are highly dispersed and generated in lower income parts of the state. These pollution sources are difficult to regulate through traditional regulatory mechanisms, so research could examine the equity implications of different approachs. With regard to criteria air pollution, pollution from heavy-duty trucks should receive targeted attention due the proximity much pollution to disadvantaged communities.

*Increase Interactions between ARB and Researchers through Modified Process*

The most valuable public interest research comes about through active dialogue between government staff and researchers. Researchers are not always familiar with how agency staff are framing questions and how research could be put into action. Details about regulatory timelines, for example, may not be widely known among researchers. Researchers, on the other hand, are actively engaged in their field of study and may be aware of new research questions and techniques that are not yet widely recognized. The ARB’s Research Division has an important role in engaging with external researchers to help the research community and ARB align with each other. The public comment opportunity on the Triennial Plan is an example this, but more engagement is needed.

A specific area where I see opportunity for a more interactive process is ARB’s annual request for short research concepts. ARB typically asks for 300-word descriptions. ARB’s guidance on what to address in those short descriptions is very general. The short descriptions can be the basis for ARB recommendations whether to fund a project.

I would recommend an annual process that provides more guidance to researchers and asks researchers to more thoroughly describe their ideas. This could occur through a two-stage process. In the first stage, ARB could request more robust versions of the Concepts that respond to a series of questions put forward by ARB, as well as more information on qualifications and budget. Then ARB research division staff could screen the concepts to determine whether the project is relevant to ARB policies. Those that pass the screen could submit larger pre-proposals, similar to what ARB often requests through annual solicitations. ARB staff could potentially provide specific feedback on successful Stage 1 applicants so that their Stage 2 proposals are more responsive to ARB needs. This second stage would occur prior to decision-making about what topics to fund. I understand the in the current process, the solicitations occur after the topics have been pretty narrowly defined. A process like what I describe would pose greater burden on the researchers, but is similar to what many other public research programs require and I expect many researchers would welcome the opportunity to more thoroughly describe their research ideas.

I appreciate that the process I describe would place more burdens on ARB staff to review proposals, but I believe that interaction would benefit both ARB staff and the research community by increasing the awareness in both directions.

Thank you for considering these comments.

Respectfully Submitted,



Andrew Campbell

Executive Director

Energy Institute at Haas

University of California, Berkeley

*acampbell@berkeley.edu*

*(415) 515-4655*