

**DOCKETED**

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*Comment Received From: Andrew Campbell, Energy Institute at Haas, UC Berkeley*  
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**Comments on Draft Initiatives from Energy Institute at Haas, UC Berkeley**

*Additional submitted attachment is included below.*



August 18, 2021

RE: Docket # 20-EPIC-01, Development of the California Energy Commission Electric Program  
Comments of Andrew Campbell, Executive Director, Energy Institute at Haas, UC Berkeley on  
Draft Initiatives for EPIC 4

Dear Commissioners:

Thank you for providing this opportunity for stakeholders to provide input on the development of EPIC 4. Collaboration across a wide range of stakeholders with expertise and interests in equity, research, development and deployment is critical to develop an EPIC portfolio that addresses all the critical dimensions of advancing technology to meet California's policy objectives. This includes additional research on the human side of technology development and deployment, a gap in the current list of draft initiatives and the focus of these comments.

### **Economic and Behavioral Barriers to Electrification**

The electrification of buildings and transportation are core parts of the state's energy strategy for both greenhouse gas emissions and air pollution reductions. The electrification challenge has technology development dimensions, but it will also require strategies that motivate households, landlords and businesses to substitute electricity for gasoline, natural gas and propane as fuel sources. The Energy Commission is increasing the state's understanding of the building challenge at a high level through the *California Building Decarbonization Assessment*. The CEC is similar leading many important transportation electrification efforts. EPIC 4 should complement these efforts with research targeted at multiple dimensions of the consumer adoption challenge. This applies to both buildings and transportation. Initiatives should be added that address the following:

- Developing strategies that overcome the propensity for like-for-like replacements of natural gas appliances in homes when an appliance burns out. Research in this area should produce empirical evidence about the technology switching challenge and recommend approaches to overcome the challenge.
- Household and business decisions to electrify will hinge in part on the economics of the switch. However, the economic calculus is not the same for every building. Climate, housing characteristics, energy prices and other considerations all impact the decision. These dimensions in turn correlate with income, race and other demographic characteristics, thereby raising equity concerns. Research should be conducted to understand this variability and the implications for business strategy and policy formulation.
- California's overall approach to recovering the costs to provide electricity service and deliver important public policy programs is quickly driving up electricity rates. Wildfire-related costs are accelerating the trend. Competitive fuels – natural gas and gasoline – are not seeing comparable price rises. This will threaten the electrification of transportation and buildings if not addressed. The current approach to electric rates is also highly inequitable, as illustrated by recent research. EPIC 4 should fund an initiative to understand this dynamic, the implications for the adoption of electric technologies and potential solutions.

The benefits to ratepayers and the state of research on these topics can be quantified by estimating increases in the rate of electrification, and thereby reductions in greenhouse gases and air pollution, and changes in how costs would be borne by different customers groups if research recommendations go into practice.

### **Identifying and Addressing Market and Regulatory Challenges for a Decarbonized Grid**

California's drive to a fully decarbonized grid requires the deployment of unprecedented levels of renewable generation and the deployment of new supply-side and demand-side technologies, many of which will be supported through the draft EPIC 4 initiatives. The financial success and rate of adoption of these technological advancements depends on wholesale market structures, incentive programs and pricing policies developed by the CEC, CPUC, CAISO and legislature. In parallel to the direct support of technologies, EPIC 4 should fund an initiative that funds work to analyze the suitability of existing planning approaches, market rules and regulations to accelerate the technological advancement required to decarbonize the grid. The purpose of projects through the initiative would be to arm the CEC, CPUC, CAISO and legislature with new analysis to improve planning and policy development to lower costs and increase safety, reliability and environmental sustainability.

The CEC could run multiple solicitations during the EPIC 4 period with the specific scope being defined by respondents or the CEC based on critical issues identified at that time. Alternatively, the EPIC 4 could fund a hub that will in turn commission research focused on topics developed with input from subject-matter experts and stakeholders.

The impact of the research can be measured through estimates of the greenhouse gas, pollution and cost reductions that would be achieved by putting policy recommendations into effect. The analysis would be highly quantitative and be based on clearly articulated assumptions.

Thank you for inviting comments on the EPIC 4 plan.

Respectfully Submitted,

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