

DOCKETED

Docket Number:	20-EPIC-01
Project Title:	Development of the California Energy Commission Electric Program Investment Charge Investment Plans 2021-2025
TN #:	238648
Document Title:	Andrew Campbell Comments - EPIC Research Concepts - Markets and Regulations for a Decarbonized Grid
Description:	N/A
Filer:	System
Organization:	Andrew Campbell
Submitter Role:	Public
Submission Date:	7/2/2021 10:29:42 AM
Docketed Date:	7/2/2021

*Comment Received From: Andrew Campbell
Submitted On: 7/2/2021
Docket Number: 20-EPIC-01*

EPIC Research Concepts - Markets and Regulations for a Decarbonized Grid

Additional submitted attachment is included below.



**ELECTRIC PROGRAM INVESTMENT CHARGE 2021-2025 (EPIC 4)
RESEARCH CONCEPT PROPOSAL FORM**

The CEC is currently soliciting research concept ideas and other stakeholder input for the EPIC 4 Investment Plan. For those who would like to submit an idea for consideration, we ask that you complete this form and submit it to the CEC by 5:00 p.m. on **July 2, 2021**.

To submit the form, please visit the e-commenting [link](https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-EPIC-01), <https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-EPIC-01>, enter your contact information, and then use the “choose file” button at the bottom of the page to upload and submit the completed form. Thank you for your input.

1. Please provide the name, email, and phone number of the best person to contact should the CEC have additional questions regarding the research concept:

Andrew Campbell, acampbell@berkeley.edu, (415)515-4655

2. Please provide the name of the contact person’s organization or affiliation:

Energy Institute at Haas, University of California, Berkeley

3. Please provide a brief description of the proposed concept you would like the CEC to consider as part of the EPIC 4 Investment Plan. What is the purpose of the concept, and what would it seek to do?

Markets and Regulations 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 have been supported by the CEC’s EPIC program. 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. We recommend that EPIC 4 fund research that analyzes the suitability of existing planning approaches, market rules and regulations to accelerate the technological advancement required to decarbonize the grid. This includes research on valuing and integrating flexible demand and energy efficiency in wholesale electricity markets, designing policies and regulations that value the electrification of buildings and transportation, and removing electricity market and regulatory barriers to the deployment of new technologies. The purpose of these projects will be to arm the CEC, CPUC and CAISO with new analysis to improve planning and policy development to

lower costs and increase safety, reliability and environmental sustainability. The projects will apply novel data sets and economic analysis to accomplish this.

4. In accordance with Senate Bill 96, please describe how the proposed concept will **"lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory energy goals."** For example, what technical and/or market barriers or customer pain points would the proposed concept address that would lead to increased adoption of clean energy technologies? Where possible, please provide specific cost and performance targets that need to be met for increased industry and consumer acceptance. For scientific analysis and tools, what data and information gaps would the proposed concept help fill, what specific stakeholders will use the results, and for what purpose(s)?

The market success of technologies supported through public and private R&D will depend, in large part, on market design and policies. The proposed research will illuminate the implications of existing policy for different technologies and inform new market designs and policy. For example, past research has shown how the revenues earned by solar generation have dropped by half as the state moved from 2,000 installed megawatts to 10,000 megawatts. Meanwhile increasing revenues can be earned by resources after the sun has set. Demand response in the state's markets is also a big blind spot. The Root Cause Analysis following the 2020 rolling blackouts was unable to determine how demand response performed at this critical time. Bringing more effective demand response technologies into the market will require research into more accurate measurement. Finally, research has found that residential electricity prices in California are two to three times as high as the cost of providing the electricity. This is a significant barrier to the adoption electric appliances and transportation.

The research performed through this initiative would create new data sets, conduct new empirical research and share the results directly with the relevant policymakers and staff at the CEC, CPUC and CAISO. These policymakers can then put the results into action through energy assessment planning, regulatory proceedings and stakeholder initiatives.

5. Please describe the anticipated outcomes if this research concept is successful, either fully or partially. For example, to what extent would the research reduce technology costs and/or increase performance to improve the overall value proposition of the technology? What is the potential of the technology at scale?

This research is about providing policymakers with analysis to help them adapt market and regulations to accelerate the deployment of the technologies necessary to decarbonize California's electric grid. If successful, it will uncover specific barriers to technology deployment in the current market and policy framework, recommend improvements that will accelerate technology advancement and engage in the policy development to the degree necessary to put the changes into action toward the state's goals. For example, research on demand response measurement could result in recommended new approaches for the CAISO to adopt, thereby stimulating opportunities for the technologies that deliver the most valuable demand response.

6. Describe what quantitative or qualitative metrics or indicators would be used to evaluate the impacts of the proposed research concept.

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.

7. Please provide references to any information provided in the form that support the research concept's merits. This can include references to cost targets, technical potential, market barriers, etc.

California's Legislative Analyst Office (LAO), which produces comprehensive surveys of key topics for the legislature, has produced a series of reports that have highlighted the need for more analysis on California electricity and climate policy. For example, *Assessing California's Climate Policies—Electricity Generation* (January 2020) cites the lack of comprehensive policy evaluations as the foremost legislative consideration. Our proposed concept would address specific areas identified by the LAO as needing focused analysis, all of which tie closely to technology advancement. For example, the report focuses at length on the barrier that high electricity prices pose for future emissions reductions.